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Infection Control: Essential for a Healthy British Columbia:

Provincial Health Services Authority

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Detailed Report

Background

Infection prevention, surveillance and control programs aim mainly at protecting patients, health care workers and visitors from contracting an illness while in the health care environment. Public Health programs have a similar goal: that of preventing the spread of communicable diseases in the population at large. Data on communicable diseases is available but data on the impact of hospital-acquired infections in British Columbia is very limited, although some health authorities have made attempts to examine the costs of specific organisms. However, studies highlight the enormity of the issue of hospital-acquired (nosocomial) infections (see below).

The Numbers on Health Care Acquired Infection

In New Zealand in 2003, it was estimated that about 10% of patients admitted to hospital will acquire an infection as a result of their hospital stay. A study released by the British National Health Service in the same year found that 9% of the population acquired an infection during a hospital stay and estimated that the cost per patient increased three-fold when the individual contracted a hospital-associated infection.

In the United States, it is estimated that nearly 2 million patients a year get an infection in a health care facility and, of those, about 90,000 die as a result of the infection. More than 70% of the bacteria that cause hospital-acquired infections are resistant to at least one of the drugs most commonly used to treat them. It is estimated that treating hospital-acquired infections accounts for 2% of total hospital costs.

A Canadian survey (reported in 2000) of hospitals with greater than 80 beds found that only 13% of hospitals adequately monitor hospital infections and only 1 in 5 institutions had the staff and procedures necessary to keep infections controlled. The lead author of that report also prepared data for the Romanow Commission. That information indicated that Canadians contract more than 200,000 hospital-acquired infections annually, resulting in 8,500 – 12,000 deaths per year. The direct costs of hospital-acquired infections were estimated to be around $1 billion annually.

While infection prevention, surveillance and control programs have been part of British Columbia health care facilities for a long time, the capacity of such programs has always varied from one facility to another. These differences in capacity and resources were carried into the 2001 reorganization of the British Columbia health care system. At that time, the system was organized into the Provincial Health Services Authority and five geographically defined health authorities: Interior Health, Fraser Health, Northern Health, Vancouver Coastal Health and Vancouver Island Health. Each of the latter five is responsible and accountable for care delivery across the continuum of care (residential care, acute care, mental health, public health and home and community care).

Background

The Provincial Health Services Authority is responsible for specialized provincial health services, such as cardiac surgery, which is delivered in a number of locations within the regional health authorities. As well, the provincial authority operates the following provincial agencies:

- British Columbia Centre for Disease Control
- British Columbia Cancer Agency
- British Columbia Provincial Renal Agency
- British Columbia Transplant Society
- British Columbia Children's Hospital and Sunny Hill Health Centre for Children
- British Columbia Women's Hospital and Health Centre
- Riverview Hospital
- Forensic Psychiatric Services Commission

In the first few years of this realignment, infection control in the health authorities operated as separate programs within facilities or a cluster of facilities, much as they had done before. At the same time, Public Health continued to operate within the Health Act and its regulations for communicable disease control. Not surprisingly, both these factors make it difficult to bring an integrated approach to infection control management across the continuum of care.

Audit Purpose and Scope

The purpose of our audit was to assess whether the health authorities have effective systems for the prevention, surveillance and control of infections across all service delivery responsibilities.

We focused on the Ministry of Health, the Provincial Health Services Authority and the five geographically defined health authorities. Specifically, we wanted to find out whether the Ministry of Health and the Provincial Health Services Authority provide a framework for infection, prevention, surveillance and control (for details see The Provincial Overview); and whether each of the health authorities:

- has a workable plan in place for prevention, surveillance and control of infections;
- is demonstrating best practices for infection prevention, surveillance and control;

- has information system support in place for infection prevention, surveillance and control; and
- is reporting on the status of its infection prevention, surveillance and control efforts and is making continuous improvements.

We did not examine the infection prevention, surveillance and control practices in the B.C. Ambulance Service, physicians' offices or facilities not funded by the health authorities.

We carried out our audit fieldwork from July 2005 to February 2006.

We performed the audit in accordance with assurance standards recommended by the Canadian Institute of Chartered Accountants and accordingly included such tests and other procedures as we considered necessary to obtain sufficient evidence to support our conclusions. In gathering our evidence, we reviewed documents prepared by the health authorities, the Ministry of Health and other agencies and organizations. We also interviewed board members, senior management, managers and physicians in the health authorities, as well as staff within the Ministry of Health.

Provincial Health Services Authority

The Provincial Health Services Authority (PHSA), one of the six British Columbia health authorities established in December 2001, is the only one without geographical boundaries. Rather, it is an umbrella organization that plans, manages and evaluates specialty and province-wide services.

The agencies governed and managed by PHSA include:

- British Columbia Centre for Disease Control
- British Columbia Cancer Agency
- British Columbia Provincial Renal Agency
- British Columbia Transplant Society
- British Columbia Children's Hospital and Sunny Hill Health Centre for Children
- British Columbia Women's Hospital and Health Centre
- Riverview Hospital
- Forensic Psychiatric Services Commission

For the purpose of this audit, we reviewed the last four agencies.

The other agencies operate in other health authorities or they are provincial or national programs. For example, the B.C. Transplant Society has its own pre-assessment and follow-up clinics, but its transplants are performed within another health authority such as Vancouver Coastal Health. The agency reports nationally.

We did not audit the British Columbia Cancer Agency as some aspects of care such as biopsies and surgeries are carried out in other health authorities. We also did not review the Agency's clinics located in each Health Authority.

Part of the PHSA mandate is to work in collaboration with the Ministry of Health and the five regional health authorities, using its unique expertise to improve the health of the population through system-wide improvements. This has the potential to include the coordination of province-wide services and programs related to the prevention, surveillance and control of infections.

We discuss our findings by combining the four agencies above into two groupings, as each serves a different population:

- the British Columbia Children's Hospital and Sunny Hill Health Centre for Children, and the British Columbia Women's Hospital and Health Centre—which we refer to in this section as Children's and Women's; and
- Riverview Hospital and the Forensic Psychiatric Services Commission—which we refer to here as Riverview and Forensics.

Children's and Women's

Children's and Women's have 318 beds in total. In 2004/2005, expenditures were about $106.7 million.

- British Columbia Children's Hospital and Sunny Hill Health Centre for Children, located in Vancouver, serve all children from birth to age 16 in British Columbia. Specialized children's services include: therapy, medical care and surgery without an overnight stay. Children with disabilities (from birth to age 19) receive services that include interdisciplinary assessment, diagnosis, consultation, referral and, for some, treatment for complex disabilities.

- British Columbia Women's Hospital and Health Centre, on the same campus in Vancouver as BC Children's Hospital and Sunny Hill Centre, offers specialized services for women, newborns and families. It is the only large tertiary maternity hospital in British Columbia. Programs it offers include clinics and services on reproductive mental health, osteoporosis, medical genetics, youth health, provincial Aboriginal health initiatives, sexual assault and addiction treatment. It is associated with the University of British Columbia and is therefore a major research centre.

Riverview and Forensics

Riverview has 436 beds in operation, with a potential of 477 beds. Its expenditures for 2004/2005 were about $82 million. Forensics has 190 beds and expenditures of $52 million in 2004/2005.

- Riverview Hospital is located in Coquitlam. It offers services such as adult psychiatry, geriatric psychiatry and neuropsychiatry to severely challenged mentally ill adults.
- Forensic Psychiatric Services Commission is located at the Forensic Psychiatric Hospital in Port Coquitlam, and has six regional clinics throughout the province. It provides court-related psychiatric assessment, treatment and management of care in the community for mentally ill adults who are in conflict with the law.

Overall Conclusion

PHSA delegates the management of infection prevention, surveillance and control to each of its agencies. As a result, there are differences across the agencies and PHSA does not have a full picture of infections across them. However, PHSA is working to create interfaces between information systems across agencies and across the province that will support integrated information and reporting on the prevention, surveillance and control of infections.

Planning for infection prevention, surveillance and control in PHSA is not integrated

PHSA is responsible for delivery of services across all of its agencies. Therefore, we expected that planning for infection prevention, surveillance and control would occur in each agency and link to PHSA planning.

Conclusion

The Provincial Health Services Authority does not have an integrated plan for infection prevention, surveillance and control across its agencies, nor do the agencies (Children's and Women's; Riverview and Forensics) have plans in place.

Findings

The strategic plans of PHSA and its agencies do not have a specific focus on infection prevention, surveillance and control

PHSA's 2004–2008 strategic plan lays out a vision, mission and a specific goal of better health for the people served. Also presented are four strategic directions (one of which is prevention, promotion and protection), each with the objective of quality and safety; and three tools to accomplish the directions. Linking to this plan, each of the autonomous agencies determines its own strategic plan using the PHSA template. The template includes the same four PHSA strategic directions, the objective of quality and safety (where infection prevention, surveillance and control are anticipated to be found as a component of safety), and the three tools to accomplish the directions.

Infection prevention, surveillance and control are not mentioned in either the PHSA's strategic plan or the agencies' strategic plans.

PHSA has a formal communication plan, but neither PHSA nor its agencies have infection management in their communication objectives

PHSA has a formal three-year communication strategic plan. One of the initiatives in the plan is a communication infrastructure strategy that will support rapid and secure communication within PHSA. The PHSA agencies also have communication plans, and those are linked to one another and to the PHSA strategic plan. All share the same key result areas, as well as the same objectives for 2005/06.

Planning for infection prevention, surveillance and control in PHSA is not integrated

The Health Promotion and Protection Communications key result area has two shared objectives related to infection management. They are to increase:

- employee awareness of PHSA health promotion and protection plans and initiatives; and
- awareness and understanding of patient safety and quality initiatives among PHSA and agency internal audiences.

We expected to see information in the PHSA or the agency's communication strategy plans that would indicate the accountability and the spokesperson to address infection management. However, we did not find these.

The Public Health Agency of Canada (formerly Health Canada) has issued a number of guidelines for infection control, pertaining to such matters as staffing levels and facility design. These are considered to be "best practice." Guidelines from other agencies such as the B.C. Centre for Disease Control and the United States' Center for Disease Prevention and Control also support best practices.

We expected to see within each agency: accessible infection control manuals, appropriate committee structures with accountabilities, staff education, qualified practitioners, workspace conducive to infection management, regular practice monitoring, surveillance of infections, and research opportunities.

Conclusion

There is room for improvement in best practices in the PHSA agencies. The required improvements vary from agency to agency.

Findings

Each agency within PHSA has its own infection control manual that is accessible to staff

Policies and guidelines for infection control differ slightly from agency to agency in PHSA because each agency wants policies tailored to its own staff and its own patients. We were told that PHSA was trying to standardize these, and is reviewing the commonalities of infection control across the agencies.

Children's and Women's

The Children's and Women's infection control manual is available on its intranet and in print on all units. Most staff use the manual as well as contacting the Infection Control Practitioner to consult on practice issues. Staff also use and find helpful the Health Canada and B.C. Centre for Disease Control guidelines.

The agencies recognize that the online manual is easier to keep updated and distributed. Staff learn of changes to the manual through email communication, announcements and education.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

We heard from physicians that they know policies and guidelines are available but they do not always access them. They are more likely to consult medical microbiology staff or an Infection Control Practitioner if they have questions. Physicians also know about national medical practice guidelines because the updates are circulated from the British Columbia College of Physicians and Surgeons and through Children's and Women's.

Riverview and Forensics

Riverview Hospital has its own infection control policy and procedure manual (March 2005), which was produced with input from Infection Control Practitioners and physicians. The manual is available on the intranet and in printed copy. Staff were alerted to the new manual through a memo to the staff information board, as well as through various committees such as the Nursing Practice Council (of which the Infection Control Practitioner is a member). Team leaders, nurse clinicians and managers were alerted by email about the new manual.

At the time of our fieldwork, the manual for the Forensic Psychiatric Services Commission was under review by the Forensic Council and was expected to be available in late 2005.

The infection control programs within each agency of PHSA vary

The infection control organization is specific to each agency, because PHSA leaves the vision and resourcing for infection control prevention, surveillance and control autonomous. Both Children's and Women's and Riverview and Forensics have an Infection Control Committee reporting to its Medical Advisory Committee. In turn, each Medical Advisory Committee is accountable to PHSA's Board Quality and Access Committee.

Infection Control Committees

PHSA is in the initial stages of establishing the PHSA Infection Control Advisory Committee (PHSA-ICAC). This group is made up of Infection Control Practitioners who envision core principles of infection control being the same across all PHSA agencies, but recognizing agency differences and the populations each serves. The agenda is expected to consist of addressing education needs and ethical issues related to infection management among all agencies. The accountabilities and reporting relationships have yet to be determined.

The draft terms of reference (undated) describe the committee's mandate as:

> "The co-ordination of facility infection control and prevention of communicable disease control activities within the institutions of PHSA. This is to ensure a safe environment of inpatients/outpatients/clinics and other designated areas. The PHSA-ICAC will also participate in province-wide surveillance of nosocomial (hospital-acquired) infections. This work will be done in conjunction with members of the provincial infection control network. The PHSA-ICAC will work in conjunction with British Columbia Provincial Infection Control (BC PIC) to promote standardization of guidelines and surveillance scope."

Agency representation on the committee is expected to be from Riverview and Forensics, the B.C. Centre for Disease Control, Children's and Women's, and the B.C. Cancer Agency. The chair of the PHSA-ICAC is the Program Director for Medical Microbiology, Virology and Infection Control from Children's and Women's.

Children's and Women's

Children's and Women's has a Patient Safety and Quality Committee that plans, directs and monitors the quality of care at the two agencies. To fulfill its mandate, the committee has created nine subcommittees, one of which is the Infection Control Committee. The Patient Safety and Quality Committee receives reports from its subcommittees about the quality of care provided at Children's and Women's. The committee has the mandate to act on issues identified in the reports. It is accountable to both the Children's and Women's Medical Advisory Committee, as well as to its management team.

The Infection Control Committee has representation from: medical staff, public health, infectious diseases, the infection control program, housekeeping, administration, sterile processing, occupational health and safety, and the patient care areas. The purpose of the committee is "to ensure the safest environment that is practical for the patients, family, visitors and staff of the hospital in all situations involving the transfer of infectious agents."

The Infection Control Practitioners meet monthly to discuss issues related to infection control and to make recommendations to the Infection Control Committee.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Riverview and Forensics

Riverview Hospital has an Infection Control Committee whose purpose is the same as that in Children's and Women's. The committee reports to the Riverview and Forensics Medical Advisory Committee. Membership includes: a physician appointed by the committee (the chair); a physician who is a member of the Division of Infectious Diseases or equivalent; individuals from nursing, microbiology, occupational health and safety, administration and pharmacy; the Infection Control Officer; and an Infection Control Practitioner.

A member of the infection control program also sits on the Nursing Council, where best practices to manage infections are discussed.

As well, the Forensic Psychiatric Services Commission has an Infection Control Committee that reports to the Forensics Council. There is no Medical Advisory Committee at the commission.

Infection Control Practitioners

The number of certified Infection Control Practitioners required for a comprehensive infection control program has not been firmly established. But the general guideline is one Infection Control Practitioner for every 150–175 acute care beds, and one for every 150–250 residential care beds. There are no clear guidelines to indicate the number of practitioners required to support other programs such as community mental health and pre- and post-natal home care programs. However, a group of infection control experts has noted that there is a need for an Infection Control Practitioner's knowledge and expertise in the community.

Children's and Women's

For the 318 beds at Children's and Women's there are 3.5 full-time-equivalent (FTE) Infection Control Practitioners—a practitioner-to-bed ratio of 1:90. The Infection Control Practitioners complement exceeds the guidelines as a result of an outbreak of methicillin-resistant staphylococcus aureus (MRSA) in 1999/2000 in the then Special Care Nursery (now known as the Neonatal Intensive Care Unit). With the highest need and most fragile babies in the newborn intensive care nursery, one case of MRSA can be devastating. Therefore, increased monitoring and increased services

are needed everywhere in Children's and Women's to reduce the risk of infection in the nursery. An Infection Control Practitioner is available 24 hours a day, seven days a week with physician back up through an on-call roster.

The Infection Control Practitioners are also available to support Children's and Women's community programs. These include pre-natal home care for managing a mother at risk during the pre-natal period and Healthy Beginnings, a postpartum program for high-risk mothers in the after-birth period.

The 2005 job posting for the Infection Control Practitioner (nurse) position listed the following qualifications:

> "graduate of an accredited school of nursing, current practising registration with Registered Nurses Association of British Columbia, 3 years of recent related experience in pediatric, obstetrical and/or operating room nursing including education and experience in infection control or an equivalent combination of education, training and knowledge regarding the mechanisms of transmission of infectious disease, knowledge regarding techniques for preventing and limiting the spread of infectious diseases, knowledge regarding infections hazards inherent in medical supplies and equipment design... ."

Certification in infection control (which is nationally recognized education in the profession) is not required, but we were told that epidemiology is very helpful. In the document *Infection Control Program Duties and Responsibilities*, the professional development for the Infection Control Practitioner includes the need for "certification in infection control through the Association for Professionals in Infection Control (APIC), infection control courses."

There is a concern that new Infection Control Practitioners hired by Children's and Women's may not have the required education for the job. The reason is that when an Infection Control Practitioner position opens, the initial request for applicants occurs within the two agencies. Because it is a nursing vacancy, any nurse is eligible for the position (in keeping with the British Columbia Nurses' Union contract), even a person who may not have the specialized skills for infection control. There is also an expectation that someone hired for the job would become certified, yet the required course work and examinations take a few years to finish. Currently, some

of the Infection Control Practitioners have professional certification, some do not, and one is working on it.

Riverview and Forensics

Riverview Hospital has 436 beds in operation with a potential for 477 (some are acute beds and some are long-term beds). Using the average highest ratio for both acute and residential care of one Infection Control Practitioner to 212 beds, the number of practitioners needed is 2.2. The Forensic Psychiatric Services Commission has 190 beds. The number of Infection Control Practitioners needed (using the same ratio of 1:212) is 0.9.

Together, then, 3.1 Infection Control Practitioners are needed for Riverview and Forensics. At present, there is only one Infection Control Practitioner responsible for both agencies, and that person is available only on weekdays. This does not meet the general guidelines.

Medical Infection Control Officer

The PHSA medical leadership in infection prevention, surveillance and control lies with the Vice-President, Medical Affairs, Quality and Risk Management, who is responsible for PHSA facilities. The chair of each agency's Medical Advisory Committee reports to this position. Both Children's and Women's and Riverview and Forensics have an Infection Control Officer.

Because PHSA is a provincial organization and not geographically defined, it has no public health program. Instead, each of its agencies falls under the jurisdiction of the regional health authority in which it is located. Children's and Women's sit within the Vancouver Coastal Health Authority and therefore the Chief Medical Health Officer (CMHO) from that authority is the medical Public Health lead for those agencies. Riverview and Forensics are located in the Fraser Health Authority, which means the CMHO from that authority is the medical Public Health lead there. The boundaries have created a challenge in the management of some aspects of infection control within PHSA, such as for example, influenza pandemic planning.

PHSA has been given the responsibility from the Ministry of Health to ensure that each health authority has an influenza pandemic plan. The planning occurs through

Public Health. The Vancouver Coastal Health Authority did a pandemic plan with Children's and Women's, but Riverview and Forensics had not been involved in any pandemic planning at the time of our fieldwork. Regular education for pandemic planning and the tabletop exercise needed to endorse the plan had also not occurred in either the Vancouver Coastal Health Authority or the Fraser Health Authority.

Children's and Women's

Infection control is managed within the Department of Pathology. There are several programs within this department, including virology, medical microbiology and infection control. The Program Director for these is a medical microbiologist with a virology background who is also the Medical Infection Control Officer at Children's and Women's and the chairperson of the PHSA-ICAC.

A draft undated document for the Medical Microbiology-Infectious Diseases-Infection Control program (MICIC) speaks to the availability of additional medical leadership being two ex-officio physicians including the Head of the Division of Infectious and Immunological Diseases and the Head of the Maternal Foetal Program. The MIDIC program is responsible for developing relevant indicators. The Paediatric Infectious Diseases physician is also participating in the program.

Riverview and Forensics

Riverview and Forensics have a general practitioner with interest in infection control who works in the acute unit at Riverview Hospital. He is the Infection Control Officer, the chair of the Infection Control Committee and a member of Medical Advisory Committee.

Pathology/medical microbiology expertise is necessary to support physician practice in infection management. There are, however, no such medical personnel at Riverview and Forensics. They are accessed from the Royal Columbian Hospital in the Fraser Health Authority.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Occupational Health and Safety Staff

The Occupational Health and Safety Department is not directly part of the infection control program, but works closely with it. The department ensures that all staff are up-to-date with their immunizations; monitors staff influenza vaccine status and reports it to the Infection Control Practitioner; ensures precautions are in place protecting staff from contracting any illnesses; and takes appropriate steps if staff become infected with an organism.

Managers at each agency expect that there will be an on-site Occupational Health and Safety Officer and an on-site committee. Children's and Women's have an off-site officer, which we were told was not as good as having someone on the site. Riverview and Forensics have had an on-site Occupational Health and Safety Officer, but the position was vacant at the time of our fieldwork. Each agency has an on-site committee.

Laboratory Staff

The laboratory in each agency plays an important role in the diagnosis of patient infections. A laboratory that is accredited and that produces timely reports of infection diagnosis is critical for good care of patients with infections. Appropriate and timely diagnosis ensures quick response and appropriate practice to reduce or cure the infection and to reduce or stop its spread.

Children's and Women's

As noted above, the Infection Control Officer at Children's and Women's is the Program Director of the Medical Microbiology, Virology labs. Within the laboratory, the August 2005 organization structure indicates that there are 21 technologist positions with one physician and two PhD positions. The lab went through the provincial laboratory accreditation process and was found to have inadequate space. Capital requests for renovation and enhancement have been sent forward for 2005/06.

We were also told that the laboratory links with the B.C. Centre for Disease Control laboratory where diagnosis and timely communicable disease reports are available.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Riverview and Forensics

Riverview and Forensics currently sends their specimens to the laboratory at Royal Columbian Hospital. Staff there are responsible for making timely diagnoses. Test results are phoned or faxed to staff at Riverview and Forensics.

Physical Environment

There is evidence that the built environment may influence the incidence of infections in facilities. The built environment refers to the type of rooms, such as: single versus multi-patient (the ability to isolate patients); the location and number of sinks; types of surfaces; ability to separate clean and soiled equipment; and availability of waterless hand-washing stations. Facility design and age affect how staff are able to carry out their practice to mitigate the chance of infections.

Children's and Women's

Interviewees told us they felt that their facility was under-built in 1984, leading to the need for constant renovation over the years.

They also noted that in Children's Hospital, 21–25% of children coming into the hospital have an infection that is initially difficult to diagnose. They therefore often need to be isolated from other children until a diagnosis is made. The MRSA outbreak at Children's and Women's was an example of an infection that showed that control was impossible without the availability of work spaces such as isolation rooms, negative pressure rooms and sinks for hand washing.

During our fieldwork, we saw renovations occurring in the labour and delivery area. For example, with the advent of midwifery, more care is occurring at home. This has made some rooms available, which, with renovations, were turned, into reverse isolation rooms (rooms that would stop the spread of infections carried in the air). We heard that all of the renovations have made the practice of managing infections safer.

However, areas remain that have not been renovated. These include: rooms not large enough to accommodate vulnerable babies and large equipment; the open space intensive care unit; and some isolation rooms with no ante room for hand washing and donning gowns and masks.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

The Standards Council of Canada has a standard called "Infection Control During Construction or Renovation for Health Care Facilities," which includes risk stratification of facility areas and populations, descriptions and stratification of construction activity, and descriptions of the roles and responsibilities of those involved with such activities (e.g., the Infection Control Practitioner).

The Infection Control Practitioner completes a "Control of Airborne Contaminants During Hospital Renovation Infection Control Compliance Survey" for each renovation or construction project. It is a form that was created using the Canadian Standards Association's Standards and the *Infection Control Tool Kit* by the Association of Professionals in Infection Control. For all of the recent renovations, the Infection Control Practitioner was called in to review plans, but was not a member of the renovation committee.

Sinks for hand washing were deemed to be adequate in newly renovated areas such as labour and delivery, but not in the regular postpartum area. Although there is a sink in every postpartum room (whether a single or two-person room), it must be shared among patients and staff. We were told there may be a new hospital in the future and thus the opportunity to plan for it with infection management in mind. In a new building, for example, there should be sinks outside rooms so staff can wash their hands on the way to the patient.

Waterless hand wash gel is available throughout the facilities, and all staff receive education on its use.

Riverview and Forensics

Riverview and Forensics are very old facilities that create significant challenges for infection control.

Most rooms at Riverview Hospital are dormitory rooms, with many people in them separated by curtains. This allows for easy transfer of infection from one patient to another. There are very few single rooms. However, we were told that one unit has a room designated for isolation.

In addition to the facilities housing many mental health patients in one room, many of the individuals are mobile and therefore able to wander about from one area to another. They are also sometimes unable to wash their hands themselves. This means that some infections can be easily spread.

Riverview is considered a residential site and therefore infection control practices differ from those in an acute care facility. In the latter, for example, a patient with infection will be placed in a single room, which may be for isolation, with reverse airflow, and will have a sink for hand washing. This is not so at Riverview. Here, patients with like infections such as MRSA may be put together in a ward—a ward that may have only one sink and one washroom for all the patients and the staff. There are few sinks outside any rooms for hand washing. They are located at the nursing station, or in washrooms, which means that for staff to wash their hands, they must leave the patient room and walk to another area in the unit. With the future of Riverview uncertain, however, we understand that renovations will not occur.

Waterless hand wash gel is available at the facility. However, because of the concern that some mental health patients may consume the product, small bottles of it are kept on the unit and in the nurses' pockets. In some places a few pumps and wall mounts are available. Education about the use of waterless hand-wash gel is provided.

Supplies

Adequate supplies to manage infections are needed to protect the staff from infected patients and to protect fragile patients from the staff. In PHSA, each agency and each unit is responsible for the supplies needed to manage infections.

At Children's and Women's, gowns, gloves and masks are available as staff need them. However, during the SARS (Severe Acute Respiratory Syndrome) outbreak, new technology and supplies were needed. These involved more expense and expenditures increased. Following the outbreak, the budget was adjusted and is now adequate. We were informed by interviewees that staff have been fit-tested for N95 masks (for respiratory outbreaks and infections), but physicians have not. Physicians we interviewed were unsure if mask fit-testing was offered to them.

At Riverview and Forensics, gowns, gloves and masks are also available as needed. A new system in the product distribution centre has just been set up to allot supplies. Disposable gowns and cotton gowns are available in each building. The central sterile supply department closes daily, but a precaution kit of 10 gowns, masks

and wipes is available for each unit. Although each unit does not have a huge allowance, supplies can be obtained if needed.

Some N95 mask fit-testing has been done by a core group of fit testers and resource nurses who are available. The coverage is good. Fit-test kits with information, supplies and respirators are accessible at the central sterile supply department.

Infection control education differs across the two agencies

Orientation

At Children's and Women's, infection control is part of the monthly hospital-wide orientation program for all new employees. Presented topics include: standard precautions, isolation categories, tools of the trade, hand washing and issues specific to the two agencies. There is more intense orientation with nurses (offered three to four times a year), medical students and medical residents (with each new rotation), and they also receive their own waterless hand wash gel dispenser at the session. Human Resources staff maintain attendance for general orientation but not for the more intense discipline specific education. Feedback on the general orientation and the demonstrations of masks and isolation practices has been positive.

Riverview and Forensics has an orientation for staff when they are hired. The presentation includes a review of universal precautions and hand washing. The Infection Control Practitioner keeps attendance.

Ongoing Education

Children's and Women's

The Children's and Women's document "Infection Control Duties and Responsibilities, 2004" states that the infection control program "will confer with departments/services for the planning of appropriate education. Appropriate tools will be used e.g., PowerPoint, and the program will be evaluated."

Regular annual in-service sessions occur with physiotherapy, occupational therapy, volunteers and plant services.

Formally, all staff have two days a year for education. Many topics may be covered, but the usual focus is on major care changes and practice. Infection control can either be a mini in-service or part of the formal education days.

Ad hoc education sessions have included the viral rapid testing program (VIRAP) and general infection control issues for nosocomial infections and their prevention. A department may request education. For example, the intensive care unit requested an update on hand washing. The Infection Control Practitioner is available to do intensive education in an outbreak, or as needed, and to train the clinical educators to carry on the education.

We saw no evaluation of the education by the participants in ongoing education.

There is no formal, ongoing standardized infection control education for physicians. However, the Medical Advisory Committee has a policy position that physicians will be compliant in their practice during specific outbreaks. We heard that it is assumed that each physician has a basic level of infection control understanding. An example of this basic education includes the use of antibiotics routinely by surgeons for their pre-surgery patients.

We also heard that education is not the role of the Medical Advisory Committee. There is no body in Children's and Women's accountable for physician education and infection management.

Physicians state that they keep up-to-date through medical literature, rounds and presentations on site when there is a focused session on infectious issues. They also read internal emails about infections.

Informally, education occurs with posters and signage for all, including the public. For example, in flu season, posters about the need for influenza immunization, when to wash one's hands and how to use the waterless hand cleansers are placed in strategic places to remind everyone about best practices.

Riverview and Forensics

Several planned in-service education sessions for all staff have been presented on topics including antibiotic resistant organisms (AROs), standard precautions, influenza, hepatitis, barrier protection, pulmonary tuberculosis (TB), HIV / AIDS, gastroenteritis,

sharps containers and safety syringes. Such sessions are based on identified need. However, it is difficult for staff to attend these because of patient care needs. The Infection Control Practitioner keeps attendance records that are entered into a database. If staff do not attend, the manager is informed. If attendance remains low, the Infection Control Practitioner informs the Director.

We were told that manager support is needed to enable staff to attend.

There is also ongoing formal education for nurses to do universal screening for hepatitis B, hepatitis C and TB because of the incidence of these infections in the mental health population. As a result of the education, diagnosis of TB comes from doing a two-step Mantoux test and reading the result, which is best practice.

Immediate education has occurred for staff when the diagnosis of an infection is made in newly admitted patients. Notification of diagnoses of communicable diseases or nosocomial infections goes to the Infection Control Practitioner and the Medical Leader from the B.C. Centre for Disease Control and from various laboratories, including Royal Columbian Hospital. The information is taken to the staff. We heard that not all psychiatric nurses are aware of the best practices needed to manage some infections because their backgrounds do not include epidemiology. Education of all nurses occurs in outbreaks, but once the outbreak is over, some staff feel that ongoing education is not needed. However, without appropriate ongoing education, a diagnosis of infection may lead to some staff experiencing fear that is out of proportion to the risk. An example was given by one interviewee about the recent admission of an HIV/AIDS patient and the immediate education needed in the residential psychiatric unit because staff did not know what to do and feared transmission of the disease.

There was education for all staff about the use of the waterless hand wash gel.

We saw no evidence of evaluation of the education sessions received by staff.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Education for Infection Control Practitioners is ongoing but only partially supported

Children's and Women's

Infection Control Practitioners at Children's and Women's stay up-to-date by reading recent literature, attending conferences, and participating in certification and recertification.

The British Columbia Children's Hospital Foundation (BCCHF) designates some of its funds to pay for education for healthcare staff. We heard that the Infection Control Practitioners apply to several organizations including the BCCHF for education funds. If an Infection Control Practitioner wants to attend a conference, he or she will, if approved by the funding organization, pay for the conference initially, and be reimbursed later.

Infection Control Practitioners are expecting free online education to be offered through the Vancouver Coastal Health Authority when the authority completes its pilot testing of the program.

Riverview and Forensics

The Infection Control Practitioner at Riverview and Forensics attends the Community and Hospital Infection Control Association conferences and has financial support to go. The Infection Control Practitioner is a member of British Columbia Provincial Infection Control and is a subcommittee member of the Provincial Infection Control Network (PICNet).

The cost for the completion of a degree and a diploma in infection control is the Infection Control Practitioner's own responsibility.

Surveillance of infections occurs and there is some monitoring of staff practices to prevent and control infections

In this audit, we looked at monitoring from two perspectives: surveillance—the ongoing, systematic collection, analysis and interpretation of data for use to improve health outcomes; and the direct observation or audit of practice (such as hand washing or gowning). In addition we looked at the mechanisms the authority has in place for monitoring any third-party contracts that have implications for infection control.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Surveillance

Surveillance in PHSA varies across agencies and depends on the availability, skill and knowledge of the Infection Control Practitioner.

Children's and Women's

Children's and Women's have defined indicators for infections that it needs to monitor to know the status of its infection rates. Surveillance takes place monthly, quarterly or annually. Examples of measures include:

- the surgical post-operative infection rate, with the following sub-indicators:
  - nosocomial (hospital-acquired) post-operative infections in the special care nursery, child health inpatients, and British Columbia Women's Hospital (maternal);
  - readmissions with post-operative infections; and
  - all post-operative infections (nosocomial and readmissions);
- caesarean section wound infection rate;
- nosocomial bloodstream infections in the special care nursery and the child health inpatients;
- methicillin-resistant staph aureus (MRSA) in the special care nursery and the child health intensive care unit (ICU); and
- vancomycin-resistant enterococci (VRE) in the special care nursery and the child health Intensive Care Unit.

These outcome indicators are measuring the effectiveness of infection prevention and control at Children's and Women's through surveillance. The indicators are described, tracked and trended over time.

Riverview and Forensics

Nurses use the "notification of infection form" that provides information on respiratory infection, urinary tract infection, surgical wound infection, cutaneous or bone infection, enteric infection, systemic infection, infestations, and communicable disease status. The form is sent to the Infection Control Practitioner.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

The resulting infection control surveillance quarterly report contains consolidated data from the ongoing Excel spreadsheet. All categories except surgical wound infection are presented in the report.

Practice Monitoring

We could find some monitoring of infection control practices such as hand washing for Children's and Women's or Riverview and Forensics. We were told that "before MRSA, there were sinks, soap, gowns and process. As the gowns were got rid of (because they were expensive and research showed that they were not necessary for good practice) part of practice changed—hand washing stopped also. Hand washing must be put back in place." We agree with this assessment.

Children's and Women's

The Children's and Women's "Infection Control Duties and Responsibilities" document for Infection Control Practitioners includes the need for practitioners to "observe techniques pertaining to standard precautions and category specific isolation precautions." Hand washing is a practice to be observed.

With the MRSA outbreak, there was an initiative for all staff to improve their hand washing. This included: education, formal and informal direct hand washing observation, and the installation of alcohol based hand washes. We were also told that there have been audits of the waterless hand wash gel use to be sure that it is used appropriately.

Audits of practice have occurred on the request of any area or unit. One example is a request received by the infection control program to audit the operating room at B.C. Children's Hospital for cleaning and disinfection procedures. It was surveyed using a standardized form. Recommendations were made.

The infection control program in Children's and Women's also does other audits if there is a problem. If a department asks for an audit, or if it is noted that infections are increasing, it will be done. For example, the Infection Control Practitioner did a review of cleaning and disinfection procedures of the renal dialysis unit in March 2004, using an audit form adopted from the *Canadian Journal of Infection Control*. The resulting report issued to both the unit and

the infection control program made several recommendations. Another audit example was the follow-up of previous audit recommendations made in the cardiology clinic.

Critical incident reviews are conducted by the infection control program should an incident include an infection. Using the root cause analysis process, the resulting report outlines the event, the causes of the event and the outcome of the event. There are practice and process recommendations, with measured risk that determines when the recommendations need to be implemented.

Children's and Women's completed a provincial practice survey in November 2004 of post-operative caesarean section wound infections. The survey questioned the surveillance methods, the type and number of procedures involved and the number of infections and readmissions. The data shows that the number of caesarean sections over the three years surveyed had increased, infections and readmissions had decreased.

Physician practice is not formally monitored, but we heard that hand washing may sometimes be monitored informally by colleagues. Some physicians participate in hand washing demonstrations when the doctors are available and when the Infection Control Practitioner brings the education to the unit.

Riverview and Forensics

We were advised that when the waterless hand wash gel was introduced, the Nursing Practice Council supported it and education was provided for all staff. It is the unit manager's responsibility to monitor the new hand washing practice, although nursing clinicians also do this. If practice is poor, the clinician will inform the manager about the inadequate infection control practices.

We were told that "Glo Germ" (a product that uses black light to detect areas on skin not adequately washed after hand washing) was used to monitor hand washing. When it was in use, hand washing practice improved. However, it is not done regularly.

Physician practice is not formally monitored.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Antibiotic Use

Children's and Women's

The facility pharmacist monitors antibiotic use in labour and delivery and also neonatal infections. If the appropriate medication is not used, a letter is sent to the physician and to the head of the department to have the antibiotic changed.

In 2004, at the request of the Deputy Minister of Health, a review of infection control practices in caesarean section surgeries was done in the Fraser Health Authority. PHSA and medical staff from Children's and Women's led the review. The resulting report, known as the Cochrane Report, was released provincially and included recommendations on clinical protocols, including timing of antibiotic use in caesarean sections. All health authorities were surveyed for their incidence of caesarean section wound infections. Children's and Women's, which completed its survey in November 2004, found that its incidence of caesarean section wound infections to be better than the benchmark determined by the Canadian Institute of Health Information. Children's and Women's has a universal policy on prophylactic antibiotics for caesarean sections. There is also a requirement for an infectious disease consultation before specific antibiotics can be ordered.

Children's and Women's will be participating in a national patient safety initiative "Safer Healthcare Now!" which is focused on six targeted interventions. (Each of these has an evidence base indicating that appropriate implementation and practice can lead to reduced mortality and morbidity.) This initiative is patterned on the Institute of Health Improvement's "100,000 Lives" campaign in the United States.

Of the six targeted interventions, three are connected to infection control: Prevention of Central Line-Associated Bloodstream Infection, Prevention of Surgical Site Infection (selected surgeries), and Prevention of Ventilator-Associated Pneumonia. For each of the interventions, a kit explains the key components, or bundles, of care; the changes that might be made to implement the care requirements; the standardized data to be collected; and the calculations to be completed, analyzed and reported. Involvement in the initiative also requires that baseline data be collected on current infection rates in these areas so that the health authority has some sense of where it

is starting. Exhibit 1 is an excerpt of the information provided for one of the components of care related to preventing surgical site infections.

Exhibit 1

Use of Prophylactic Antibiotics in Surgery

Components of Care

1. **Appropriate Use of Prophylactic Antibiotics**
   For the purposes of the 100,000 Lives Campaign, the antibiotic process measures are these:
   - Antibiotics within 1 hour before surgical incision
   - Prophylactic antibiotic consistent with national guidelines (e.g., CDC)
   - Discontinuation of prophylactic antibiotics within 24 hours after surgery

   *Due to the longer infusion time required for vancomycin, it is acceptable to start this antibiotic (e.g., when indicated because of the beta-lactam allergy or high prevalence of MRSA) within 2 hours prior to incision.

2. **What changes can we make that will result in improvement?**
   Hundreds of hospital teams across the United States have developed and tested process and systems changes that allowed them to improve performance on the antibiotic use measures. Some of these changes are:
   - Use preprinted or computerized standing orders specifying antibiotic, timing, dose and discontinuation
   - Change operating room drug stocks to include only standard doses and standard drugs, reflecting national guidelines
   - Reassign dosing responsibilities to anesthesia or holding area nurse so that timeliness is improved
   - Use visible reminders/checklists/stickers
   - Involve pharmacy, infection control and infectious disease staff to ensure that appropriate timing, selection, and duration are maintained

Source: Safer Healthcare Now! Campaign How-to-guide, Prevent Surgical Site Infections (February 2006)

Riverview and Forensics

Riverview and Forensics do not routinely monitor antibiotic use in their patients. However, overall, the facilities have recognized that antibiotic use for patients is greater during the winter than the summer.

The Pharmacy and Therapeutics Committee has reviewed antibiotic use for patients with catheters in the past, and has seen nothing unusual in infection levels or in antibiotic use.

We were told that in mental health most antibiotics are prescribed by the patient's own physician and that there are guidelines

for antibiotic use. However, physician use of antibiotics is not monitored. The Infection Control Practitioner receives the laboratory results from Royal Columbian Hospital, and reviews the organism to see if the antibiotic prescribed is appropriate. If it is not, then informal follow-up may occur with the physician.

During team rounds to see and review patients, the clinical pharmacist may be present and offer input regarding appropriate antibiotic use.

We noted that antibiotic use surveillance has been an agenda item for the Infection Control Committee, where it was felt that the review should be done regularly. We found, however, no follow-up to the suggestion in the subsequent minutes.

Research

We expected that with Children's and Women's being associated with the University of British Columbia (UBC), and with Riverview and Forensics offering specialized services for mental health patients, research into best practices to manage infections would be occurring in these PHSA agencies.

Children's and Women's

Physicians interviewed at Children's and Women's do have a research relationship with UBC. Because the facilities see more than 7,000 women a year, there is a sizeable population available for study.

Children's and Women's are taking part in several research projects, some of which are connected with UBC. Examples of research related to the management of infections include:

- PHSA joint project (internal): Viral Infection Rapid Respiratory testing (VIRAP) is identifying viral and bacterial infections in children for best early intervention. This research is being done in partnership with B.C. Children's Hospital, the B.C. Centre for Disease Control, and PHSA—all within PHSA. Samples from across the province are tested at the laboratory at Children's and Women's.
- Infectious disease with a focus on viral disease and pregnancy (UBC).

- Development of protocols for acute myeloid leukemia (AML) (international): Children with AML are very susceptible to infections, and protocols are needed for prevention.

Riverview and Forensics

No research is occurring, except that Riverview and Forensics recently did an internal study on indwelling catheters and infection rates.

Contract Monitoring

PHSA has contracted out its housekeeping services to a private company. As part of the contracting-out process, infection control and other programs set up specifications for service that were included in the request for proposals. For example, the contracted housekeeping agency was responsible for developing and putting into place its own infection control manual. The chosen contractor met this specification (and others), and the manual is in print on all sites and available to all housekeeping staff. We were told that it was designed and written by the physician who was involved in the SARS outbreak in Ontario.

Although involved in the specification process, PHSA infection control staff were not part of the contractor selection process.

PHSA measured the cleanliness level in all its agencies before the contracting out occurred in order to have a baseline measure of cleanliness.

Staff hired by this contractor were trained in Seattle and came on-site the day the contract began. There was no overlap with previous staff or pre-visit time. Ongoing education, including education for infection control and housekeeping practice, is the responsibility of the contractor, and records of education are kept by the contractor and available to be seen by PHSA on request.

There are internal cleanliness audits, as well as external audits. All audits use the same methodology. At the time of our fieldwork, PHSA had completed its first external housekeeping audit. The external audit is conducted by WesTech Systems FM, Inc. using 19 components and risk categories determined by definition and weighting. Specialized technology and education are employed. Reports are generated and corrective action is expected. In the audit

of June 2005, PHSA received an overall score of 85.22%, meeting the benchmark of 85%. However, while Children's and Women's surpassed 85%, Riverview and Forensics scored only 70.2%. The contracted company and PHSA will continue to do joint audits annually.

Children's and Women's

On the first day of the changeover to the contracted housekeeping staff at Children's and Women's, and for some time after, a problem arose because all key rings had been changed on all sites for all rooms and the new keys were not available to the contractor. This made it difficult for cleaning staff to enter rooms that had to be cleaned according to the contract protocol. The protocol supports environment cleanliness, which reduces the chance of infections.

We were told that housekeeping under the new arrangement was initially acceptable, but that it began to slip when the housekeeping staff continually changed.

Another issue was concern over the possibility of increased infections because of lack of adequate training for new staff and relief staff. Staffing and orientation of full-time housekeepers are done for each unit or site. However, relief staff also move from unit to unit and site to site as they are needed. Each must understand not only the policies in the infection control manual, but also the policies on each site where he or she works. If there is substantial difference in a policy, the housekeeping staff member must reorient. For example, "terminal clean" is standard practice across all agencies, but for an MRSA outbreak there may be differences in policy. We also heard that infection management for children needs special attention. For example, toys need to be cleaned frequently using products that are non-toxic.

Day-to-day contract-related concerns are managed between the unit and the contractor's on-site manager. Ongoing issues are taken to the PHSA Joint Review Committee monthly. Infection control has representation on this group.

Demonstrating best practices for infection prevention, surveillance and control in PHSA needs improvement

Riverview and Forensics

Riverview and Forensics housekeeping is contracted out differently than occurs in Children's and Women's. It is done in conjunction with AREC (Accommodation and Real Estate Services, formerly British Columbia Building Corporation), which subcontracts housekeeping services. We heard that the subcontractor has traditionally worked to an office standard for housekeeping rather than to a hospital standard for cleanliness. PHSA decided to have Riverview and Forensics participate in the external audit. When the results of the external audit turned out to be lower than the benchmark, PHSA gave the contractor 60 days to meet the hospital standard before re-audit.

The subcontractor's housekeeping supervisor can be called at anytime when there is a cleanliness issue. When this occurs, improvements are made, but we were told that changes have not occurred fast enough.

External Monitoring

PHSA participates in a three-year sequential accreditation through the Canadian Council on Health Services Accreditation (CCHSA), a national non-profit, non-government body that offers health organizations a voluntary, external review process to assess quality. The council develops national standards, helps health organizations assess compliance with those standards, and shares the information from the reviews and decisions. The accreditation review process highlights both strengths and areas for improvement and includes recommendations. Each year for three years, PHSA determines which agencies will go through the accreditation process.

Children's and Women's took part in the process in June 2004. The Quality and Access Committee minutes state that the report from the accreditation council's surveyors did not note any recommendation for infection management in the agencies.

Riverview and Forensics are scheduled to take part in the process in November 2006.

Results of past accreditation reviews are on the PHSA website in the "Pulse News" section. No mention is made of the management of infections. The accreditation reports are not posted on the PHSA website.

Information system support for infection prevention, surveillance and control is weak

A key requirement of a comprehensive infection control program is that it enables access to good data so that all can understand who has infections, where the infections are occurring in the health authority, and what the overall infection rates are. We expected PHSA to have information systems in place to support infection surveillance and control and to have authority-wide standardized data definitions so that all people and all agencies would collect the same data and be able to compare it.

Conclusion

PHSA does not have an integrated information system to support its infection control programs in Children's and Women's or in Riverview and Forensics.

Findings

PHSA has a number of stand-alone information systems that are not connected

As each agency in PHSA is autonomous, each comes with its own information system to collect data. Although there are some similarities, there are also notable differences and most of the systems do not link or interface with one another to provide information across PHSA.

Children's and Women's

Children's and Women's has a clinical information system and a repository where information is collected. However, the infection control program uses a unique clinical information system that was developed in-house. The Infection Control Practitioner enters data into a Palm Pilot at the bedside or on standardized forms filled in by hand. One decision support person then manages the resulting information. The infection control system does not interface with any other system.

Physicians are not accessing the information system and therefore they receive their laboratory reports by fax.

We also heard that staff immunization status is not known except for influenza — information that is collected by Occupational Health and Safety staff and reported to the Infection Control Practitioner by email. This means that when there is an outbreak of an infectious disease such as measles, there is no easy way to access staff immunization status.

Information system support for infection prevention, surveillance and control is weak

Riverview and Forensics

Riverview and Forensics uses the Cerner information system. Those we interviewed thought that the system supported acute care better than residential care, which is where the mental health patients more aptly fit. Mental health staff therefore felt that a system for residential care would better suit their needs. Another problem is that laboratory results come from Royal Columbian Hospital in the Fraser Health Authority, on the MI-Choice information system (MICIS)—a system where Cerner does not interface. Again, this means that physicians and the Infection Control Practitioner must receive faxed lab reports.

Data is generated by staff when any patient has an infection. "The Notification of Infection form" is completed and sent to the Infection Control Practitioner. An Excel spreadsheet is created that includes information on the case number, the patient, the unit where the patient resides, the type of infection, the antibiotics used, and more details about the infection (e.g., whether the pneumonia diagnosis is viral, is following influenza, or is because of fluid aspiration).

PHSA has adopted an electronic "e-Health Clinical Systems Framework"

In August 2005, a version of the e-Health Clinical Systems Framework was adopted by PHSA to link the present information systems in the authority (including Children's and Women's and Riverview and Forensics) through an integration service. The framework shows that PHSA will change to a common information system and interface with systems already in use. The Ministry of Health expects PHSA, as well as all other health authorities in the province, to create such an interface in the future.

In addition to the e-Health framework, PHSA's 2005 strategic plan includes implementation of: "an electronic health record strategy integrated with clinical decision support as a means of improving quality of care, reducing errors and increasing efficiencies." The creation of an interfaced information system for use by each of the agencies will allow information such as infection diagnosis to be entered into the integrated information system by the laboratory and then show up on the patient's electronic record. The information will be available to the Infection Control Practitioner and all staff and physicians caring for the patient

wherever the patient and the staff are. This strategy is in keeping with the Ministry of Health's direction.

The framework is to be implemented over the next three to five years. However, we did not see an implementation plan during our fieldwork.

Each agency tracks data differently, so PHSA does not have an overall picture of its infections

We expected to see data tracked and analyzed similarly from agency to agency within PHSA, and data linked to be able to detect outbreaks anywhere in the health authority. As patients move from one service to another within the authority, an outbreak in one service may alert another of an impending risk of infection. We found, however, that the agencies gather information differently, and the information does not link to provide a full picture of infections across PHSA agencies.

Children's and Women's collect data from their own information system. The data comes from that entered at the bedside into a Palm Pilot and from forms filled in by unit staff and entered into the system by the Infection Control Practitioner. The decision support staff member (of the infection control program) interprets the data to determine outbreaks and reports this information to the infection control program.

The infection control program also collects retrospective information from patients' charts and from "discharge abstract data" (DAD), a national information system used by all hospitals in all provinces. DAD contains demographic, administrative and clinical data for patients in acute care, chronic care, rehabilitation or day surgeries. Data is collected on a patient's admission, during a hospital stay, on discharge, or on readmission, using the *International Classification of Diseases and Related Health Problems* (10th edition).

At Riverview and Forensics, the Infection Control Practitioner collects data by hand from the standardized form that is completed on the ward, and the information is written by hand into an Excel spreadsheet and reviewed. Recognizing a trend that indicates an outbreak is left to the Infection Control Practitioner and anyone on the unit to determine. There is a trigger guideline: three cases are defined as an outbreak of infection. Some outbreaks are recognized and reported and some are not. For example, we were told of an

Information system support for infection prevention, surveillance and control is weak

outbreak for which no reporting occurred. Only when staff began to chat about the occurrences was it realized that there had been an outbreak.

Both Children's and Women's and Riverview and Forensics use DAD. However, the two agencies do not link their data to know where an infection or an outbreak is occurring within PHSA. The information is only reviewed on a patient's discharge. Therefore, there is not a full picture of infections in PHSA.

Data quality assurance systems are in place for all agencies, but some are agency specific

With the chance of movement of patients and the public across agencies in PHSA, infections have the opportunity to spread. For agencies to know if this is occurring, comparison of data is needed. Collecting comparable data by using common data definitions is an important means of ensuring that all agencies are using the same information in the same way.

Children's and Women's have some nationally standardized data definitions for reporting of nosocomial infections and communicable diseases. The nosocomial definitions are used for the in-house developed infection control information system. Data is input into the Palm Pilot by the Infection Control Practitioner during chart review or when laboratory results are received.

However, we heard that other data definitions are still being determined. Definitions are expressed as a ratio and for some definitions the denominator had not yet been defined. For example, a team was starting to determine the denominators for definitions of bloodstream infections.

We also saw the document *Infection Control Service Guideline Infection Type and Description 2002* that gave descriptions of several infections and referred the reader to the United States' Center for Disease Control and Prevention. The descriptions have information, but it is not stated as a ratio and is therefore not a data definition.

At Riverview and Forensics, we did not see data definitions other than those in DAD. Data collection is by the Infection Control Practitioner through chart review, forms completed by staff or laboratory results.

Reporting on prevention, surveillance and control of infections across PHSA is by agency

Because there is a formal reporting structure in each PHSA agency, we expected to see regular reporting by the infection control program to the Medical Advisory Committee, agency senior management, the PHSA senior executive team, the PHSA Quality and Access Committee, and the Board of Directors. We expected these groups would monitor the reports, discuss them and initiate action or follow-up as appropriate. The reports of all agencies together would give a clear picture of infections in PHSA.

We also expected that the agencies would learn from one another as each changed its infection control practices based on new research and on agency-made improvements determined following any infection incident.

For agencies that are accountable to PHSA and that work in other health authorities or are members of provincial bodies, we expected that their reports on infection prevention, surveillance and control would come to the senior executive team, the Quality and Access Committee and the Board of Directors.

Conclusion

Overall, reporting of infections within each agency varies. Limited information is received by PHSA Senior Executive, and the Board.

Findings

Infection control reports are used to support and improve infection control practice at the local agency but not across PHSA

When surveillance and incidence reports are produced and improvement or change in the management of infections is needed, each of the agencies we focused on did this. However, what has been learned in one agency was not shared with the other.

Children's and Women's review critical incidents that occur because of infections. The resulting reports contain recommendations for practice change. We saw such a report: it set out the implementation of the recommendations for practice, and the accountabilities and timelines to implement the new practice.

An example of practice change because an incident occurred with an MRSA outbreak in Special Care Nursery (SCN) in March 2003

Reporting on prevention, surveillance and control of infections across PHSA is by agency

subsequent to the outbreak in 1999/2000 (seen above in the section on Infection Control Practitioners). In the SCN, now known as the neonatal intensive care unit (NICU), the most fragile babies are cared for. The report states that the outbreak was contained with two positive babies remaining on isolation. Environmental cleaning, good hand washing, employee awareness and education were enhanced with the recognition of the outbreak. All clinical services were involved. As a result of these practices, and with the support of NICU renovations that included isolation rooms, a MRSA outbreak has not occurred again. However, single cases have occurred. The outbreak, and the lessons learned from the practices were not shared with Riverview and Forensics to support any change to limit MRSA outbreaks there.

Most reporting on infections at Riverview and Forensics is verbal, and is given at the Nursing Practice Council. The matters are discussed and practice changes occur as required. The information does not go to Children's and Women's.

We did not see any reports from Riverview and Forensics being shared with Children's and Women's or vice-versa. Because there may be a cross-over of the addicted population between Riverview and Forensics and Children's and Women's (because the latter has a special unit for pregnant addicted mothers), we think that what has been learned in one agency would support improved infection prevention, surveillance and control practice and outcomes in the other.

Agency reporting to the Quality and Access Committee and to the Board of Directors differs significantly

The Quality and Access Committee is a subcommittee of PHSA's Board of Directors. The purpose of the committee is to "assist the Board in fulfilling its responsibilities to ensure the quality of patient-centered care and equitable access to provincial health services by establishing and monitoring performance targets, standards of care and service, guidelines and policies for the population served by the Authority." The committee expects to review a number of reports, including those from the Chair of each agency's Medical Advisory Committee in order to monitor and evaluate the quality of care being provided and to observe trends. We were told that the committee wants to know about problems or areas where further investigation may be warranted, and it also wants to know what

is being done to resolve issues related to the problems, including infections.

The committee reviewed the quality reporting process when there was a suggestion by senior executive that the balanced scorecard (a method of determining what the board needs to measure regularly) be adopted. Agencies are to propose the measures or indicators that reflect their progress in attaining the strategic goals. The Quality and Access Committee agreed. However, the resulting indicators were not available at the time of our fieldwork.

We understand that each agency's Infection Control Committee reports to its local Medical Advisory Committee. The terms of reference for the Quality and Access Committee indicate that the agency Medical Advisory Committee Chairs are to submit reports on the monitoring of the quality of medical practice. The chairs also report to the Vice-President, Medical Affairs, Quality and Safety. We saw one infection surveillance report from a chair of an agency Medical Advisory Committee and we also saw reporting from the Vice-President, Medical Affairs, Quality and Safety that covered high level issues such as: "Safer Healthcare Now!" and critical incident reports related to medical practice and infections for Children's and Women's.

The results of the external housekeeping review went to the Quality and Access Committee.

The infection control policy that addresses the reuse of disposable, single-use medical devices also came to the committee's attention. This occurred because there were different practices across the agencies. The PHSA policy was written in conjunction with Canadian Standards Association and Health Canada guidelines. The policy was passed by the committee and was then forwarded to the board where it was approved. Then the policy was circulated to all the agencies to be evaluated and reviewed by various committees, including the Infection Control and Risk Management Committee (in place at the time of the minutes), the senior executive team and agency Infection Control Committees.

Concerns and reports that go to the Quality and Access Committee are also to go forward to the Board of Directors and the board minutes reflect that some information is going forward.

Reporting on prevention, surveillance and control of infections across PHSA is by agency

Children's and Women's

Children's and Women's report quarterly on a number of indicators that measure the effectiveness of their services. The measures include: nosocomial bloodstream infections for inpatients, nosocomial surgical site infections for inpatients, nosocomial surgical site infections—caesarean sections in the special care nursery—and MRSA and VRE colonization cases in the special care nursery. These rates are measured to show their limitations, significance, the drivers of the infection, the PHSA target, benchmarks and comparators (some of which were established and some not), trend comments, action taken and the source of the data. An example is the surgical site infections—the caesarean section rate was trended over two years and found to be within the peer comparisons.

One critical incident report we saw that went to the Quality and Access Committee and the board gives a brief description of the event, the reasons the event may have occurred, practice recommendations to mitigate the event reoccurring, and the outcome of the event.

Also reported are outbreaks (as determined by data definitions), such as gastroenteritis in any facility.

At the April 2004 meeting the chairperson of the Medical Advisory Committee gave an update on overall infection control issues and medical practice to the committee.

Riverview and Forensics

We saw no verbal or written reporting of infections by Riverview and Forensics to the Quality and Access Committee.

Reporting on prevention, surveillance and control of infections across PHSA is by agency

The senior executive team is not receiving infection information from PHSA agencies

The PHSA has a senior executive team, and each agency has a senior management team. We expected that infection prevention, surveillance and control reports for each agency would go to its own senior management who would then report to the PHSA senior executive team.

The PHSA senior executive team membership includes the Presidents of the large agencies: B.C. Cancer Agency, B.C. Children's Hospital and Sunny Hill Health Centre for Children, B.C. Women's Hospital and Health Centre, and Riverview and Forensics. Agencies such as the B.C. Centre for Disease Control, B.C. Provincial Renal Agency and B.C. Transplant Society have representation on the committee through the PHSA Executive Vice-President, Quality Management, Performance Improvement and Innovation. Other members include the: Chief Financial Officer; Vice-President, Medical Affairs, Quality and Safety; Chief Information Officer; Vice-President, Academic Liaison and Research; Vice-President, Research Administration and Business Development; Senior Vice-President, Provincial Services, Public and Population Health; Chief Communication Officer; and Chief Liaison Officer.

We were told that all reports going to the Quality and Access Committee and the Board of Directors come through the senior executive team. However, in the PHSA senior executive team minutes, we saw little about infection prevention, surveillance and control. There were no incident reports from any agency.

Children's and Women's

We saw references in some Management Committee minutes and Joint Executive Advisory Council minutes to such topics as SARS guidelines, staff immunization rates, N95 mask fit-testing VIRAP and the "Do Bugs Need Drugs?" initiative. No mention was made of infection surveillance reports presented to the Quality and Access Committee. Therefore, we could not tell whether the infection control or incident reports from Children's and Women's to the Quality and Access Committee reached the Management Committee or the Joint Executive Advisory Council. The minutes of the senior executive team did not indicate receipt of these minutes.

Reporting on prevention, surveillance and control of infections across PHSA is by agency

The Joint Executive Advisory Council has representation from both Children's and Women's. The minutes indicated that a policy on the reuse of single-use medical devices had been approved by the Quality and Access Committee and was received by the council.

Riverview and Forensics

The Director's meetings at Riverview and Forensics receive regular infection control updates on such topics as flu virus outbreaks and policy and practice to protect staff from infectious diseases.

The results of the external audit of housekeeping were also discussed. As a result, the Infection Control Practitioner and the contractor were to tour the areas with the lowest scores. A report was expected to be written and forwarded to the Quality Committee of the Medical Advisory Committee. The report had not been completed during our fieldwork.

We saw no reports from the Riverview and Forensics Directors' meetings at the senior executive team.

There is limited oversight of infection prevention, surveillance and control by agency Medical Advisory Committees

As noted earlier, each agency overseen by PHSA has its own Medical Advisory Committee. And therefore, because of the autonomy of each agency, no single, overall Medical Advisory Committee exists in the health authority.

The Infection Control Committee of each agency reports to its Medical Advisory Committee. The chair of each Medical Advisory Committee reports to the Vice-President, Medical Affairs, Quality and Safety who is a member of the Quality and Access Committee and the senior executive team.

We were told that the Infection Control Committee in each agency sends reports to its own Medical Advisory Committee (MAC). We did not see written reports. MAC reports to the Quality and Access Committee on infection control and medical practice. An example of a report occurred at the Quality and Access Committee meeting in April 2004, when the Children's & Women's MAC chair gave an update on overall infection control issues and medical practice. Thus, it would seem that reports are available both

Reporting on prevention, surveillance and control of infections across PHSA is by agency

to MAC and a report comes from Children's & Women's MAC to the Quality and Access Committee of the Board.

Riverview and Forensics stated that they had similar reporting, We saw no reports to or from the MAC.

This means that overview of infection surveillance and medical practice in PHSA is limited.

Agencies that are accountable to PHSA, but operate in other health authorities or report elsewhere, create infection surveillance and program reports, although they are not seen within PHSA

We expected to see reports submitted to PHSA on the infection control programs by all the agencies accountable to it, even if some of those agencies offer services in other health authority facilities or are linked to provincial or national programs. In our fieldwork, we found three written reports from agency infection control programs. They came from the B.C. Cancer Agency, B.C. Centre for Disease Control and B.C. Transplant Society.

During its survey, the Canadian Council on Health Services Accreditation gave the B.C. Cancer Agency a recommendation to "review its infection control resources to develop a more comprehensive model for infection control." The recommendation included the need for screening patients, conducting surveillance and giving staff access to infection information. As a result of this recommendation, the B.C. Cancer Agency conducted a review of its infection control program and published a report, *Infection Control Program Review* (January 2006). The report proposed additional infection control positions, a new reporting and committee structure, and linkage changes.

Because the Canadian Council on Health Services Accreditation is known to send its report to the CEO of the health authority, we expected that the B.C. Cancer Agency's June 2005 accreditation recommendation would have come to the attention of the senior executive team and the Quality and Access Committee. However, we did not see any discussion or reference to it.

The B.C. Centre for Disease Control issues ongoing reports on its website about the incidence of communicable diseases. It also produces an annual report with data received from each of the health authorities through a provincial information system.

Reporting on prevention, surveillance and control of infections across PHSA is by agency

The 2003 report shows each communicable disease by health authority, HSDA and gender, and trends for each disease. A section is also included in the report on the incidence of the SARS infection in 2003 by week. We did not see this report noted on the agenda or in the minutes of either the senior executive team or the Quality and Access Committee.

The B.C. Transplant Society reports on the number of infections for transplant recipients, by organism and system, in its annual *Report of Outcome and Activity*. The 2003 report, made available to us during our fieldwork, shows that infections are monitored and reported regularly. Again, we did not see this report referred to on the agenda or in the minutes of either the senior executive team or the Quality and Access Committee.

PHSA's reporting on its infection control program is limited

The Health Act, and its regulations require that communicable diseases be reported to Public Health and subsequently to the B.C. Centre for Disease Control (one of the agencies of PHSA), which receives the reports on behalf of the Provincial Health Officer (the centre then reports these diseases to the Public Health Agency of Canada). PHSA meets this requirement.

As well, PHSA must, as part of its Performance Agreement with the Ministry of Health, report on its influenza immunization rate for health care workers. PHSA meets this reporting requirement also.

We found no reporting on nosocomial infections or any other aspects of PHSA's agencies infection control programs available to the public.

The results of the external housekeeping audits are posted on the health authority's website.

Response from the Provincial Health Services Authority

Response from the Provincial Services Authority

February 21, 2007

The Office of the Auditor General of British Columbia
8 Bastion Square
Victoria, BC
V8V 1X4

Dear Sir/Madam:

On behalf of the Provincial Health Services Authority (PHSA), I wish to thank the Office of the Auditor General of British Columbia for its efforts to evaluate and contribute to the further strengthening of the province's health systems for the prevention, surveillance and control of infections as reflected in its recent infection control audit and report. Ensuring British Columbians benefit from an efficient and effective infection control system is a goal that is shared by the PHSA and we appreciate the Auditor General's recommendations for improving that system.

Many things have changed since the Auditor General's initial visit with PHSA in August of 2005. Some of the issues which the Auditor General's report brings to our attention were known and are being addressed; others were new and reflect a clarifying view from the "outside". For all recommendations, we are grateful to the audit team for their recommendations, insight and candid commentary. We trust that the steps taken to date are congruent with these recommendations.

We are also appreciative of the opportunity, through this letter, to respond to the Auditor General's report. Our response is a fairly detailed one—in keeping with the detailed nature of the report—and focuses on the following four areas: Summary (which highlights actions PHSA has already taken since the Auditor General's visit); Background (which addresses background information related to organization and administration of infection control activities within PHSA and its agencies); Specific Areas of Response (which addresses specific areas within the Auditor General's Report); and Conclusion. It is our hope that in providing this response we will further inform the Auditor General's understanding of the state of infection prevention, surveillance and control within PHSA and its agencies.

Response from the Provincial Services Authority

1. Summary

Until May of 2005, Infection Control Services resided within their respective agency and were organizationally separate. The agency control for Infection Control lay with Administration as in the case of the BC Cancer Agency (BCCA) and Riverview Hospital or with the Department of Pathology as in the case of Children's and Women's Hospitals. In 2005, it was decided, in response to a CCHSA review of infection control services at BC Cancer Agency that the needs of the various populations would be best served by a coordinated corporate infection control service. The organizational structure was modified to bring the Infection Control service under the portfolio of the Vice President of Quality and Safety.

Following a period of planning and consolidation, PHSA has since:

1. *Created a single PHSA infection prevention and control unit*
2. *Hired a Corporate Director for PHSA infection prevention and control*
3. *The Corporate Director has visited all PHSA Agencies in the fall of 2006 (BC Cancer Agency's Vancouver Island Centre next spring) to get a picture of IC activities*
4. *Consolidated IC cost centers across PHSA to a single cost centre*
5. *Submitted an IC strategic plan, which addresses reporting structure, staffing and budget*
6. *Clarified corporate governance of IC through two paths:*
   1) To PHSA Administration via the PHSA infection prevention and control (PIPCCS) team which meets bimonthly to discuss agency specific issues as well as common issues such as construction policies, housekeeping, staff screening, isolation policies and responses. Minutes from these meetings are currently submitted to the VP Quality and Safety PHSA
   2) to the Board of PHSA via direct reporting of the agency Infection Control Committee to the MAC as defined in the Medical Staff Rules, May 2005. The Safety and Quality of Care Committees of the Agencies also receive the reports of the IC committee for review and action as needed
7. *Yearly Infection Control Summaries of Activities will be submitted to the VP Quality and Safety PHSA*

8. *Forensic Psychiatric Services (190 beds) has hired a 1 FTE infection control practitioner since the audit took place.*

The mandate of the new PHSA Provincial Infection Prevention and Control Coordinated Services (PIPCCS) is to provide, within the standards of Health Canada and CCHSA:

a) *Monthly surveillance data of nosocomial infections per institution, including:*
   Identification and capture of data
   Analysis of data
   Proactive surveillance of high risk groups and of inpatients
   Surgical Wound Infection surveillance of selected procedures and surveillance of catheter related bloodstream and all nosocomial bloodstream infections.

b) *Audits of specific areas or departments conducted at a minimum of five a year*

c) *Monitoring construction/renovation projects and Food and Housekeeping services*

d) *Maintaining of updated policies and procedures*

e) *Successful containment of outbreaks*

f) *Education and training*

g) *Antibiotic stewardship*

h) *Product evaluation*

i) *Coordination with Safety and QA programs*

j) *Research*

k) *Production of monthly, quarterly, yearly reports which include outcome data after construction, cohorting, and after introduction of infection control "link-nurses".*

2. Background

The Provincial Health Services Authority was established in December of 2001. In contrast to other Health Authorities which had evolved from pre-existing institutional amalgamations and Health Boards, the Provincial Health Services Authority was created to include a variety of agencies providing specialized services for all of British Columbians. The founding agencies included organizations that were deemed hospitals under the Hospital Act (Children's & Women's Health Centre of British Columbia,

BC Cancer Agency, Riverview Hospital), agencies which had a provincial public health mandate (British Columbia Centre for Disease Central), agencies governed by the Forensic Psychiatric Commission (Forensic Psychiatric Institute), and agencies defining standards for care and funding services provided by other Health Authorities (B.C. Renal Agency, Cardiac Agency, British Columbia Transplant Society).

The agencies, deemed hospitals, are direct care providers within the governance of PHSA and therefore were reviewed by the Auditor General's Infection Control Review with the exception of the BC Cancer Agency. Agencies providing services through other Health Authorities have their Infection Control Services managed by these host Health Authorities.

With the creation of Health Authorities, initial amalgamation within PHSA focused on corporate services. This contrasted with the more mature organizational amalgamation that had already occurred in the geographic Health Authorities. In early 2002, PHSA consolidation focused on Human Resources, Finance, and Supply Chain/Logistics. Given the unique nature of the PHSA Agencies that founded PHSA, it was decided to preserve the agencies' unique mandates given the strength of their public presence and the distinctive populations which they served.

In 2003/2004, a second wave of corporate consolidation began building on the work already being undertaken in support services and began to build PHSA Laboratories to address specialty, low-volume and high-volume testing and reporting needs.

From the perspective of infection control, the three Agencies, C&W, BCCA and RVH served distinct populations. Each population faces differing infectious risks and brings to the agency differing confounding patient characteristics. These can be summarized as follows:

1. *RVH — from the infection control perspective, RVH infectious disease risks are most commonly those that arise in the community and affect health care and other institutions. Intravenous lines and urinary catheters are used rarely. Patients commonly present with concurrent chronic infections including hepatitis, HIV, STD and tuberculosis because of concurrent addictions and drug use, while patients in the facility are exposed to infections that are seen in the broader community, for example norovirus. The focus of infection control at RVH is on screening for hepatitis, HIV, STD and tuberculosis and the management of these infections if found, the treatment of lung, urinary or wound (traumatic) infections and the management of community acquired contagious infections (norovirus).*

2. *BCCA—Both neoplasia and its treatment result in suppression of a patient's immune system making opportunistic and other infections more likely than in a healthy individual. BCCA, through its regional centers, community clinics and care networks, provides a substantial portion of treatment, including chemotherapy in the community. The principle focus of infection control at BCCA (agency) is infection management in the neutropenic patient. As the majority of treatment provided to patients by BCCA is on an outpatient basis, community acquired infections are an important aspect of the infection control programme.*

3. *C&W—(BCCH and BCWH) Community acquired self limited infections of the respiratory and gastrointestinal tract are the commonest infections treated at BCCH. In the past 2 to 3 years Community acquired MRSA has become an issue in children as well as in the drug using population at BCWH. In addition, the care of the neutropenic patient is critical. Immunocompromised patients, because of age, congenital anomaly, concurrent diseases or therapy are a focus of attention. With 12,000 surgical procedures annually, nosocomial infections are also monitored. BCWH is focused on post-operative surgical infections in otherwise healthy females.*

   It is in the NICU and the oncology transplant ward where infection has its greatest impact on infants and children who are immunosuppressed due to age, treatment or disease process. It was in this group of patients that C&W took a stand to contain and eliminate MRSA in 2001.

   Surveillance at C&W focuses on Surgical Site infections, bloodstream infections and catheter related bloodstream nosocomial infections.

Response from the Provincial Services Authority

3. Specific Areas of Response

Planning for infection prevention, surveillance and control (reference page 6)

Current PHSA strategic plan

Revisions to the PHSA strategic plan made in October 2006 make explicit the commitment to patient safety including identifying infection control as one of the priority strategies to achieve operational excellence. These revisions are included in:

1) *The responsibilities of the Board Quality and Access Committee with its mandate to ensure the quality of patient-centered care and equitable access to provincial health services. The committee establishes and monitors performance targets, standards of care and service, guidelines and policies for the population served by the PHSA.*

2) *Establishment of pre-emptive organizational safety and risk recognition, evaluation and mitigation through the development of a failure laboratory and a coordinated responsive risk monitoring system for PHSA and its Agencies, which tracks adverse events, infection control and protocol audit and surveillance.*

BC Mental Health & Addiction Services (BCMHAS) updated its strategic plan in July 2006 to include patient safety as a key strategic goal. While not explicitly stated in the strategic plan, infection control is a key area of focus for patient safety. As well, the BCMHAS strategic plan specifically refers to strengthening information platforms for quality improvement, patient safety, and outcomes measurement; and to working with Directors to integrate reliable, valid information routinely into planning and management practice. To this end, an infection control database was developed in 2006 and regular reports can now be prepared for managers and directors related to infection control.

Current PHSA Communication Plan

The PHSA Communications Plan articulates the high level, shared communications objectives which direct the work of the corporate communications team across PHSA and its nine agencies. At this level, the plan does not include objectives for specific communication issues, including specific accountabilities or spokespersons. Nor does the plan address operational communications—i.e., the communications

undertaken by both corporate and clinical areas to support their day to day work. These communications are developed and undertaken directly by the infection control group and include internal newsletters, meetings with clinical providers, written communications and face to face communications. For example, Infection prevention, surveillance and control is communicated to staff at BCMHAS through a number of mechanisms: internal newsletters (BCMHAS Quality Leader, FPS Focus, and the RVH Insight), email announcements/alerts, BCMHAS Joint Manager Meetings, staff meetings, Directors meetings, and Quality Councils.

Organism trending based on clinical and laboratory data is communicated daily and outbreak communications and quarantines are communicated as necessary using the institutional communications staff and whatever vehicles are required for the timeliness of the communication need. Reportable diseases are reported on in the timeline and in the form required by legislation.

PHSA and its Agencies participate in Canadian Patient Safety Week, which in 2006, focused on hand hygiene and infection control in the acute care. PHSA staff have participated in CBC interviews, aired nationally, in early 2005 stressing the importance of hand washing for infection control and have lead the province in conjunction with the Ministry of Health and the College of Physicians and Surgeons in the appropriate use of antibiotics for infection disease treatment.

Best practices (reference page 8)

Infection Control Manuals

Historically the nature of infectious diseases, both community-acquired and nosocomial, seen in the agencies differed because of the unique populations they serve. For example, chickenpox is a significant threat to immune suppressed children and infants while Norwalk virus is a common focus of BCCDC and Riverview Hospital (RVH). Sexually transmitted diseases are a focus of BCCDC but of lesser risk to patients at BC Children's Hospital (BCCH) which is the host for Oak Tree Clinic that provides care for HIV-infected families. BCCH has taken an aggressive surveillance and control policy to MRSA in contrast to other health authorities. The infection control policies reflect the specific needs of the populations served, not of the institutions as might be the case in other health authorities.

Where it makes clinical sense, the PIPCCS aims to standardize policies while recognizing the specific differences in agency needs. The following are policies that will be standardized:

1. *Construction policies*
2. *Hand washing protocols*
3. *Education modules*
4. *Respiratory infection isolation protocols*
5. *ARO screening protocols*
6. *Audit forms*
7. *Report formats*
8. *Data collection and management*

Staffing (reference page 10)

Required number of Infection Control Practitioners

We agree with the report's observation that the number of certified infection control practitioners required for a comprehensive infection control program has not been firmly established. However, we also point out that there are no infection control staffing guidelines for "tertiary care" outpatient facilities such as the BC Cancer Agency sites or the Ambulatory Care Building on the C&W site.

We also highlight that Riverview Hospital is in a process of downsizing. The number of beds at RVH has decreased since the report was written and will further decrease substantially over the next year or two. While RVH is still slightly understaffed for infection control given the infection control practitioner/bed ratio, the appropriate ratio will be established in the very near future as additional beds and patients are transferred to regional health authorities. FPS now has a full time infection control coordinator in place. Options will be explored to share the FPS infection control coordinator with RVH in the short term in order to address the bed ratio requirements. Weekend and after hours coverage occurs through overtime and call out of infection control coordinators.

Response from the Provincial Services Authority

Certification requirements (reference page 11)

PHSA desires certification, but in reality there is such a paucity of certified infection control practitioners that we must educate infection control practitioners "in-house". We support efforts to create local IC certification programs and encourage and support staff to attend meetings, training courses and conferences relevant to IC. The lack of availability of certified staff is not unique to PHSA and has been pointed out by the needs assessment conducted by the Provincial Infection Control Network (PICNet) in 2006.

Union rules currently require serious consideration of internal applicants, including those with a "duty to accommodate" status. These rules limit our ability to give external applicants primary consideration.

Pandemic Planning (reference page 12)

C&W and RV both have pandemic plans; the C&W plan is in draft state and the RVH plan is finalized. BCCA is working on a draft pandemic plan.

Occupational Health and Safety Staff (reference page 13)

We agree with the Auditors observation that it is not ideal to have an offsite occupational health and safety (OH&S) officer, as is the case with C&W. Infection Control has a very good working relationship with the staff in OH&S which effectively mitigates this situation. Further strengthening of infection control skills amongst OH&S staff is being addressed by Human Resources, the portfolio under which this functional group falls.

The OH&S position for Riverview Hospital and the Forensic Psychiatric Services, vacant at the time of the audit, was filled in 2006 and is available for both RVH and FPS.

Physical Environment (reference page 14)

The report appropriately acknowledges staff concerns that BC Children's Hospital was under-built in 1984, which has led to the need for constant renovation over the years. This is a very significant problem for infection control which affects day-to-day work. The issues of patient care space, access to sinks of appropriate design, controlled air flow and isolation affect the day to day management of patients. The lack of isolation facilities have allowed a gradual shift in awareness of risk and attention to detail that can only be overcome with increasing surveillance at key locations. The attention to detail has been rekindled through the "Safer Healthcare Now" initiative in the operating theaters, delivery suites and intensive care facilities.

The report comments on the issue of construction contamination. As of 2006, there is no part of BCCH that has not been rebuilt. Preplanning, auditing during construction and isolation for construction activity have been variably effective and recently, given the risk knowledge, is as good as it can be for renovations that have to occur in a functioning facility.

With respect to the report's statement that 21–25% of children coming into hospital have an infection that is initially difficult to diagnose, we believe the auditor's statement comes from information provided by the C&W staff. Data from 2000/2001 (N=7,605 admissions) show that 29% of pediatric patients were admitted with infection; and of 41,040 bed days 21% were due to infection (excluding oncology). This equated to 29/85 beds being occupied at any given time by a patient with infection. Such infections are community acquired gastrointestinal and respiratory viral and bacterial infections in the main. The incidence of nosocomial infections resulting in admission or readmission is very low. Surgical site infections for clean procedures remain less that 2%, a rate that compares well with peers.

Ongoing Education (reference page 17)

With respect to the statement "There is no body in Children's and Women's accountable for physician education and infection management" the newly conceived Provincial Infection Prevention and Control Coordinated Services (PIPCCS) has as part of its mandate the development of standardized programs for surveillance systems, antibiotic management, teaching modules and best practices. PIPCCS is the only body that would address this recommendation in PHSA.

This is not true for students, nursing, medical and resident staff, all of whom are oriented on arrival. The Infection Control programme is responsible for their orientation to standards and expectations.

Ongoing support for staff to attend education is a priority at FPS and RVH. While staffing shortages and clinical priorities can impede staff attendance from time to time, every effort is made to minimize this issue. An infection control nurse was hired for FPS in the fall of 2006 and this has allowed for increased on-site education and training support to staff. A presentation to the BCMHAS Directors Committee has been made by the infection control nurse.

Response from the Provincial Services Authority

Education for Infection Control Practitioners (Reference Page 19)

The Auditor General's report indicates auditors heard that IC practitioners apply to several organizations for education funds. In the past, the C&W laboratory or the agency provided funds for IC practitioners to attend courses and conferences to support their professional development. With the consolidation of IC services within PHSA and in the six months prior to budget consolidation, the Corporate Director and the VP provided discretionary funds for this purpose. Funding was also obtained for ICP attendance at the CHICA conference in 2006 from PICNet and the BC Patient Safety Task Force. In the budget proposal for PHSA IC services, education and travel support for IC practitioners is identified as a separate budget item.

BCMHAS provides full financial support for ongoing education and training.

Antibiotic Use (Reference page 21)

PHSA Infection Prevention and Control Service is aiming to standardize antibiotic use surveillance across the agencies. At Riverview the use of antibiotics is limited to the treatment of intercurrent infections acquired in the community (most commonly respiratory or urinary) or tuberculosis. Antibiotic use is guided by culture and sensitivity where cultures can be obtained (laboratory facilities are provided by FHA) or by BCCDC treatment protocols for tuberculosis.

Antibiotic use in the community is the focus of the "Do Bugs Need Drugs" campaign, a joint collaboration of PHSA, CDC, BCCH, the Ministry of Health and the College of Physicians and Surgeons.

Research (reference page 23)

With respect to research into best practices, PHSA agencies are participating in CNISP surveillance, the Safer Health Care Now initiative in the BCCH PICU, are responsible for the provincial roll out of the Bugs and Drugs program, and are funded through the Michael Smith Foundation to look at the impact of rapid viral diagnosis in the BCCH Emergency.

Response from the Provincial Services Authority

Housekeeping — contract monitoring (reference page 24)

Within the PHSA a multi-disciplinary group called the Joint Review Committee (JRC) continues to meet regularly to monitor issues related to contracted housekeeping services. Infection control is represented on this group and it has been reported that there has not been an outbreak directly associated with housekeeping standards. Issues of compliance and consistency in specific areas are being addressed through the JRC, which includes the active engagement of infection control practitioners.

Assessing compliance is an on-going quality assurance process — there are daily, weekly and monthly measures (based on a standard compliance audit tool). Most areas comply with standards. However, when a compliance issue is identified, it is addressed and re-audited within seven days. Recently we have implemented a change in process with the contractor to assure any compliance issues are addressed quickly.

In addition we participate in an annual external measurement to evaluate housekeeping standards across the province in both HA-operated and contracted facilities. Audit results are available on-line and additional detail can be provided on request. PHSA facilities have met or exceeded the standard. There continues to be a Provincial Contract management structure in place — a Steering Committee and a Technical Team. These structures are used to share information as well as solutions to ongoing problems.

Since the Auditor General's report was written, BCMHAS has implemented several changes to ensure that housekeeping standards meet provincial guidelines. An external housekeeping audit conducted on December 18, 2006 showed that RVH received a score of 88% and FPH received a score of 90%, exceeding the 85% benchmark as well as the June 2005 score of 70%. A housekeeping notebook is kept at all nursing stations to record housekeeping needs and additional housekeeping services are requested by staff as needed. Enhanced cleaning schedules are available for situations that have an infection control component.

Infection Control Information System (reference page 27)

PHSA recognizes that a fully-integrated, health authority-wide information system based on standardized data definitions is ideal and is working towards that goal. Riverview Hospital and C&W have information systems in place at the present; however each is designed to address the specific IC needs of their respective populations.

Infection control information systems are currently being reviewed and PHSA is taking steps towards greater integration between these systems.

Significant progress has been made by BCMHAS, which implemented a new infection control database in the fall of 2006. The Infection Control Database provides information which can be specifically broken down into time periods, infection types and areas, and immunizations. Data are generated by staff when any patient has an infection. The notification of infection form is completed and sent to the Infection Control Coordinator. The information is entered in the Infection Control Database. The database provides quick access to select information and assists the Infection Control Coordinators to recognize any trends that indicate an outbreak.

The Infection Control manuals at RVH and FPS were updated in 2004 and 2006 and contain standardized information about infection types and control methods. Communications are received regularly from B.C. Centre for Disease Control (BCCDC) regarding any new infectious diseases and/or outbreaks in BC, Canada and internationally.

With respect to accessing staff immunization status, current PHSA HR policy is that the immunization status of staff, students and others and screening of staff for TB, measles, mumps, rubella and VZV is voluntary but is required for employment. As such, there is no robust repository of staff member immune status. However, the greatest degree of activity and emphasis related to staff immune status at this time has been focused, in accordance with province-wide initiatives, on an aggressive campaign to immunize staff against the flu. PHSA agencies have shown positive results in this important area of infection control.

Electronic "e-Health Clinical Systems Framework" (reference page 28)

With respect to the differing mechanisms for tracking infection control amongst PHSA agencies, each of the agencies has a current and accurate monitoring process for its infections. As the predisposing factors and the spectrum of infections in each of the Agencies are so different, an overall picture of infections does not make clinical sense. Monitoring for compliance with IC policies, infection control procedures for construction and other non-patient aspects of infection control can be improved and are the basis for the creation of the PHSA IC service.

There is very little if any cross contamination of patients, families, staff (nursing or medical) to make cross agency outbreaks likely. The PIPCCS serves this function should the need arise.

Response from the Provincial Services Authority

Reporting on prevention, surveillance and control (reference page 31)

With respect to reporting on prevention, surveillance and control of infections across PHSA by agency, it is not clear in what areas the auditors suspect that better communication amongst PHSA agencies would be helpful. Each of the agencies has a differing population that has a different infection risk profile. This contrasts the common risk profile in the facilities in the geographic health authorities (acute care—adult, community care).

Within agencies, the results of infection control surveillance and monitoring are communicated to the Presidents and to the MAC via a direct reporting relationship from the IC committee to the MAC and through the programme structure. As the risks faced by each agency differ, the value of communication of events and strategies is limited. That being said, the areas of common focus have been articulated in the mandate of the PIPCCS (Appendix 1). These areas focus on commonality of process rather than reporting and on facilities and community acquired events. Specific protections to the immune compromised patient (by age or as a result of treatment or illness) are reflected in the consistency of screening, and isolation protocols and procedures.

A Medical Advisory Committee (MAC) is now in place at FPS and the FPS Infection Control Committee now reports to the MAC.

The medical staff rules were Board approved in May 2005 and PHSA was the first Health Authority to bring IC reporting directly to the MAC.

Infection Control Reports (reference page 31)

The report identifies that infection control reports are used to support and improve infection control practice at the local agency but not across PHSA. With the creation of the new PHSA IC service—there is significant communication between C&W and Riverview infection control practitioners with regular meetings and sharing of reports. This will help to identify "sharable" items.

Agency reporting (reference page 32)

The report indicates that while it was aware of critical incident reports related to medical practice and infections presented by the Vice-President, it saw no infection surveillance reports from the chairs of the Medical Advisory Committees nor from the Vice-President, Medical Affairs, Quality and Safety.

The VP Quality and Safety provides reports to the Quality and Access committee of the Board on behalf of the MAC chairs when they cannot attend the meetings and is responsible for generating the Quality and Access Indicator report that was provided to the Board biannually. Along with the critical incident reports that are provided for each meeting, the Indicator report addresses nosocomial infection control issues with specific indicators and commentary.

The report also comments on reporting of infection control information to the senior executive team. With the development of the strategy monitoring PHSA balanced scorecard, the indicator report that had been going to the Quality and Access committee is now being expanded and being presented to the PHSA Executive Leadership Council (ELC) (formed in May 2006).

Of note, the agency indicator reports are being presented quarterly to the ELC and are being peer reviewed so that inter-agency learning is facilitated.

All of the Agencies have management structures that receive information via their internal programme and management structure.

With respect to oversight by agency medical advisory committees, the C&W MAC receives reports from the IC committee and has reviewed its terms of reference. The Safety and Quality of Care committees at C&W study and act upon reports of the IC committee. The IC committee at BCCA reports to Administration. MAC chairs are provided with access to the Quality and Access Committee indicator report for their agency. This report provides infection control indicators and trending.

On page 35 of the report, the statement is made that "Agencies that are accountable to PHSA, but operate in other health authorities or report elsewhere, create infection surveillance and program reports, although they are not seen within PHSA".

The current structure of Section 51 of the Evidence Act in British Columbia precludes cross-health authority sharing of quality information. Currently, the only way to access this information is to have an Order in Council applied to the work of multiple Health Authorities, for example applying to the community oncology network, the BC Renal Agency or Cardiac Agency. In the case of a specific patient event, one Health Authority can invite another to participate in their critical incident review. Such reviews do not allow assessment of populations or trends. The solution to this problem is to change Section 51 of the Evidence Act.

PHSA's reporting on its infection control program (reference page 36)

Public reporting of protected information, in this case the information that is gathered on behalf of the Board under Section 51, is illegal under the Evidence Act in its current form in BC. Where required by law and by the performance agreement, PHSA is compliant with reporting requirements.

4. Conclusion

PHSA wishes to again acknowledge and thank the Office of the Auditor General for its efforts to audit and provide recommendations related to infection control. As can be seen from the detailed comments of response provided above, much work has already been done to address shortcomings and opportunities for improvement identified. As an organization which holds patient safety and quality of care at the heart of all it does, PHSA is grateful for the insights offered through the audit and is committed to continually improving the efficiency and effectiveness of its systems for the prevention, surveillance and control of infections.

Sincerely,

Lynda Cranston

President & Chief Executive Officer

Appendices

Appendix A: List of reportable communicable diseases in British Columbia

Reportable Communicable Diseases (reportable by all sources)		List of Communicable Diseases (reportable by laboratories only)
Acquired Immune Deficiency Syndrome	Leprosy	All specific Bacterial and Viral Stool Pathogens: (i) Bacterial: Campylobacter; Salmonella; Shigella; Yersinia. (ii) Viral
Anthrax	Lyme Disease	Amoebiasis
Botulism	Measles	Borrelia Burgdorferi Infection
Brucellosis	Meningitis all causes: (i) Bacterial: Hemophilus; Pneumococcal; other (ii) Viral	Cerebrospinal Fluid Micro-organisms
Cholera	Meningoccocal Disease: All Invasive; Including Primary Meningococcal Pneumonia and Primary Meningococcal	Chlamydial Diseases including Psittacosis
Congenital infections: Toxoplasmosis, Rubella, Cytomegalovirus, Herpes Simplex, Varicella-zoster, Hepatitis B Virus, Listeriosis, and any other Congenital Infection	Conjunctivitis	Cryptococcus neoformans
Cryptosporidiosis	Mumps	Herpes Genitalis
Cyclospora Infection	Neonatal Group B Streptococcus Infection	Human Immunodeficiency Virus
Diffuse Lamellar Keratitis (DLK)	Paralytic Shellfish Poisoning (PSP)	Influenza
Diphtheria: cases, carriers	Pertussis (Whooping Cough)	Legionellosis
Encephalitis: Post-infectious, Subacute Sclerosing Panencephalitis, Vaccine-related, Viral.	Plague	Leptospirosis
Food-borne illness: All Causes	Poliomyelitis	Listeriosis
Gastroenteritis epidemic: Bacterial, Parasitic, Viral	Rabies Reye's Syndrome	Malaria
Genital Chlamydia Infection	Rubella: Congenital Rubella Syndrome	Q fever
Giardiasis	Severe Acute Respiratory Syndrome	Rickettsial Diseases
Haemophilus Influenza Disease, All Invasive by Type	Smallpox	Severe Acute Respiratory Syndrome
Hantavirus Pulmonary Syndrome	Tetanus	Smallpox
Hemolytic Uremic Syndrome	Transfusion Transmitted Infection	Tularemia
Hemorrhagic Viral fevers	Tuberculosis	West Nile Virus Infection
Hemorrhagic Viral fevers	Tularemia	
Hepatitis Viral: Hepatitis A; Hepatitis B; Hepatitis C; Hepatitis E; other Viral Hepatitis	Typhoid Fever and Paratyphoid Fever	
Human Immunodeficiency Virus	Venereal Disease: Chancroid; Gonorrhea – all sites; Syphilis	
Invasive Group A Streptococcal Disease	Waterborne Illness: All causes	
Invasive Streptococcus Pneumoniae Infection	West Nile Virus Infection	
	Yellow Fever	

Source: Health Act Communicable Disease Regulation (BC Reg. 281/2004)

Appendix B: Canadian Standards Association infection control during construction or renovation of health care facilities (April 2003)

The standard describes precautionary and remedial measures for preventing exposure to agents, released or augmented, because of actions undertaken during health care facility construction, renovation, maintenance, and repair work.

Preventive measures are categorized as I, II, III and IV and are put in place for all stages of construction activity—before, during, and after. The prevention measures required are based on the analysis of population risk group and type of construction activity. Table 1 shows a preventive measures analysis and includes the use of information from Tables 2 and 3.

Table 1: Preventive Measures Analysis

Population Risk Group[1]	Construction activity type[2]			
	Type A	Type B	Type C	Type D
Group 1	I	II	II	III/IV
Group 2	I	II	III	IV
Group 3	I	III	III/IV	IV
Group 4	I - III*	III/IV	III/IV	IV

[1] See Table 2 to determine population risk group

[2] See Table 3 to determine construction activity

* When the risk group is Group 4 and construction activity is Type A, the infection prevention and control department shall be consulted to determine the appropriate preventive measure (I, II, or III).

Table 2: Population Risk Groups and Geographical Areas (Examples only)

Population Risk Group	Typical areas
Group 1 Lowest Risk	Office areas Public areas Physical plant workshops and housekeeping areas
Group 2 Medium Risk	Outpatient clinics (except oncology and surgery) Admission and discharge units Physical therapy areas remote from patient care areas

Appendix B

Population Risk Group	Typical areas
Group 3 Medium to high risk	Emergency (except trauma rooms) Nurseries for healthy newborns Geriatrics Nuclear medicine
Group 4 Highest risk	Intensive care units Oncology units and outpatient clinics for cancer patients Burn care units Trauma rooms Operating rooms Sterile supply areas

Table 3: Construction Activity Type (Examples only)

Construction Activity Type	Description
Type A	Inspection and non-invasive activities. These include but are not limited to: a) activities that require removal of no more than one ceiling tile or require wall or ceiling panels to be opened; and b) electrical trim work.
Type B	Small scale, short duration activities that create minimal dust. These include, but are not limited to: a) activities that require access to chase spaces; and b) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for less than 30 minutes.
Type C	Activities that generate a moderate to high level of dust; require demolition; require removal of a fixed building component (e.g., sink) or assembly (e.g., countertop, cupboard); or cannot be completed in a single work shift. These include but are not limited to, a) activities that require sanding of a wall in preparation for painting or wall covering; b) removal of floor coverings, ceiling tiles, and casework; c) electrical work above ceilings.
Type D	Activities that generate high levels of dust and major demolition and construction activities requiring consecutive work shifts to complete. These include but are not limited to: a) activities that involve heavy demolition or removal of complete cabling systems; and b) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for more than 1 hour.

Appendix C: Office of the Auditor General: Performance Auditing Objectives and Methodology

The Office has three lines of business:

- examining the reliability of the provincial public sector's financial reporting;
- assessing how well the public sector manages its key risks; and
- assessing the quality of provincial public sector performance reports.

Each of these lines of business have certain objectives that are expected to be achieved, and each employs a particular methodology to reach those objectives. The following is a brief outline of the objectives and methodology applied by the Office for assessing how well the public sector manages its key risks.

Performance Auditing

What are Performance Audits?

Performance audits (also known as value-for-money audits) examine whether money is being spent wisely by government —whether value is received for the money spent. Specifically, they look at the organizational and program elements of government performance, whether government is achieving something that needs doing at a reasonable cost, and consider whether government managers are:

- making the best use of public funds; and
- adequately accounting for the prudent and effective management of the resources entrusted to them.

The aim of these audits is to provide the Legislature with independent assessments about whether government programs are implemented and administered economically, efficiently and effectively, and whether Members of the Legislative Assembly and the public are being provided with fair, reliable accountability information with respect to organizational and program performance.

Appendix C

In completing these audits, we collect and analyze information about how resources are managed; that is, how they are acquired and how they are used. We also assess whether legislators and the public have been given an adequate explanation of what has been accomplished with the resources provided to government managers.

Focus of Our Work

A performance audit has been described as:

... the independent, objective assessment of the fairness of management's representations on organizational and program performance, or the assessment of management performance, against criteria, reported to a governing body or others with similar responsibilities.

This definition recognizes that there are two forms of reporting used in performance auditing. The first—referred to as attestation reporting—is the provision of audit opinions as to the fairness of management's publicly reported accountability information on matters of economy, efficiency and effectiveness. This approach has been used to a very limited degree in British Columbia because the organizations we audit do not yet provide comprehensive accountability reports on their organizational and program performance.

We believe that government reporting along with independent audit is the best way of meeting accountability responsibilities. Consequently, we have been encouraging the use of this model in the British Columbia public sector, and will apply it where comprehensive accountability information on performance is made available by management.

As the performance audits conducted in British Columbia use the second form of reporting—direct reporting—the description that follows explains that model.

Our "direct reporting" performance audits are not designed to question whether government policies are appropriate and effective (that is achieve their intended outcomes). Rather, as directed by the Auditor General Act, these audits assess whether the programs implemented to achieve government policies are being administered economically and efficiently. They also evaluate whether Members of the Legislative Assembly and the public are being provided

with appropriate accountability information about government programs.

When undertaking performance audits, we look for information about results to determine whether government organizations and programs actually provide value for money. If they do not, or if we are unable to assess results directly, we then examine management's processes to determine what problems exist or whether the processes are capable of ensuring that value is received for money spent.

Selecting Audits

All of government, including Crown corporations and other government organizations, are included in the universe we consider when selecting audits. We also may undertake reviews of provincial participation in organizations outside of government if they carry on significant government programs and receive substantial provincial funding.

When selecting the audit subjects we will examine, we base our decision on the significance and interest of an area or topic to our primary clients, the Members of the Legislative Assembly and the public. We consider both the significance and risk in our evaluation. We aim to provide fair, independent assessments of the quality of government administration and to identify opportunities to improve the performance of government. Therefore, we do not focus exclusively on areas of high risk or known problems.

We select for audit either programs or functions administered by a specific ministry or government organization, or cross-government programs or functions that apply to many government entities. A large number of such programs and functions exist throughout government. We examine the larger and more significant of these on a cyclical basis.

Our view is that, in the absence of comprehensive accountability information being made available by government, performance audits using the direct reporting approach should be undertaken on a five- to six- year cycle so that Members of the Legislative Assembly and the public receive assessments of all significant government operations over a reasonable time period. We strive to achieve this schedule, but it is affected by the availability of time and resources.

Appendix C

Planning and Conducting Audits

A performance audit comprises four phases—preliminary study, planning, conducting and reporting. The core values of the Office—independence, due care and public trust—are inherent in all aspects of the audit work.

Preliminary Study

Before an audit starts, we undertake a preliminary study to identify issues and gather sufficient information to decide whether an audit is warranted.

At this time, we also determine the audit team. The audit team must be made up of individuals who have the knowledge and competence necessary to carry out the particular audit. In most cases, we use our own professionals, who have training and experience in a variety of fields. As well, we often supplement the knowledge and competence of our staff by engaging one or more consultants to be part of the audit team.

In examining a particular aspect of an organization to audit, auditors can look either at results, to assess whether value for money is actually achieved, or at management's processes, to determine whether those processes should ensure that value is received for money spent. Neither approach alone can answer all the questions of legislators and the public, particularly if problems are found during the audit. We therefore try to combine both approaches wherever we can. However, because acceptable results-oriented information and criteria are often not available, our performance audits frequently concentrate on management's processes for achieving value for money.

If a preliminary study does not lead to an audit, the results of the study may still be reported to the Legislature.

Planning

In the planning phase, the key tasks are to develop audit criteria—"standards of performance"—and an audit plan outlining how the audit team will obtain the information necessary to assess the organization's performance against the criteria. In establishing the criteria, we do not expect theoreti l perfection from public sector managers; rather, we reflect what we believe to be the reasonable expectations of legislators and the public.

Appendix C

Conducting

The conducting phase of the audit involves gathering, analyzing and synthesizing information to assess the organization's performance against the audit criteria. We use a variety of techniques to obtain such information, including surveys, and questionnaires, interviews and document reviews.

Reporting Audits

We discuss the draft report with the organization's representatives and consider their comments before the report is formally issued to the Legislative Assembly. In writing the audit report, we ensure that recommendations are significant, practical and specific, but not so specific as to infringe on management's responsibility for managing. The final report is tabled in the Legislative Assembly and referred to the Public Accounts Committee, where it serves as a basis for the Committee's deliberations.

Reports on performance audits are published throughout the year as they are completed, and tabled in the Legislature at the earliest opportunity. We report our audit findings in two parts: an Auditor General's Comments section and a more detailed report. The overall conclusion constitutes the Auditor General's independent assessment of how well the organization has met performance expectations. The more detailed report provides background information and a description of what we found. When appropriate, we also make recommendations as to how the issues identified may be remedied.

It takes time to implement the recommendations that arise from performance audits. Consequently, when management first responds to an audit report, it is often only able to indicate its intention to resolve the matters raised, rather than to describe exactly what it plans to do.

Without further information, however, legislators and the public would not be aware of the nature, extent, and results of management's remedial actions. Therefore, we publish updates of management's responses to the performance audits. In addition, when it is useful to do so, we will conduct follow-up audits. The results of these are also reported to the Legislature.

Appendix D: Office of the Auditor General: 2006/07 Reports Issued to Date

Report 1 - April 2006

Strengthening Public Accountability: A Journey on a Road that Never Ends

Report 2 - September 2006

The 2010 Olympic and Paralympic Winter Games: Review of Estimates Related to the Province's Commitments

Report 3 - November 2006

Audit of Treaty Negotiations in British Columbia: An Assessment of the Effectiveness of British Columbia's Management and Administrative Processes

Report 4 - December 2006

Province of British Columbia Audit Committees: Doing the Right Things

Report 5 - December 2006

Audit of Government's Corporate Accounting System: Part 2

Report 6 - December 2006

Monitoring Government's Finance Province of British Columbia

Report 7 - December 2006

Government's Post-secondary Expansion — 25,000 Seats by 2010

Report 8 - December 2006

Changing Course — A New Direction for British Columbia's Coastal Ferry System: A Review of the Transformation of BC Ferries

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Report 9 – January 2007

Seeking Best Practices in Financial Reporting: Report on the Province's 2005/06 Public Accounts

Report 10 – February 2007

Follow-up of 2004/2005 Report 2: In Sickness and in Health: Healthy Workplaces for British Columbia's Health Care Workers

Report 11 – March 2007

Infection Control: Essential for a Healthy British Columbia
The Provincial Overview

This report and others are available on our website at:
http://www.bcauditor.com